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FERTILITY DECISION-MAKING PROCESSES: A CRITICAL ESSAY

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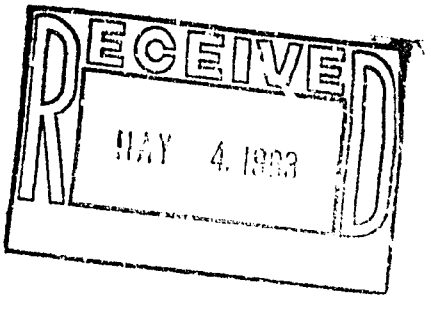

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Abstract

The literature, mainly social-psychological, on fertility decision-making processes is reviewed. Different types of decisions, such as passive and active, are defined, and the decision processes characterizing pretransitional and posttransitional societies distinguished. Some decision models focus on the perceived supply of children, others on the demand for children, still others on the perceived costs of fertility regulation; a few combine all these elements. Rules such as subjective expected utility and expectancy x value specify how individuals combine and weigh decision factors. Sequential models focus on different stages of the family life cycle. The manner in which competing decisions among family, kin, and others are reconciled is also examined.

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Fertility Decision-Making Processes: A Critical Essay

Various elements are involved in fertility decisions—the demand for children, the supply of children, and the costs of fertility regulation. The assumption has been that these elements affect fertility because individuals somehow take all of these considerations into account; however, the manner in which this actually transpires is a relatively new focus of inquiry. Individual perceptions, motivations, and decision processes have been increasingly investigated because they are assumed to have predictive power in explaining fertility behavior. In developing nations, greater use of effective fertility regulation promotes a closer association between fertility preferences and actual behavior; within various developed nations, a narrowing of demographic differentials in fertility also means that personal preferences have become more important.

This essay examines complementary insights on this issue provided in a recent report from the Panel on Fertility Determinants of the U. S. National Academy of Sciences (Bulatao and Lee, 1982), which reviews and integrates the evidence on determinants of fertility in developing nations. In addition, aspects of the fertility decision-making process not directly addressed in the report will be examined. The outline of the essay is as follows. Models of fertility decision making require that the individual, couple, or

household first forms perceptions of the major elements in the decision. These perceptions of supply (fecundity, child survival), demand (the value of children, sex preferences), and fertility regulation costs (characteristics of contraceptive methods, consequences of use) may differ from objective assessments. Moreover, the demand for children will be influenced by alternative sources of status for women, which produce the economic, political, and social status and psychic satisfactions that large families can provide. The first and second sections of the essay review information on these perceptions, providing more detail about supply and alternatives to fertility to complement the discussions of perceptions of demand and perceptions of regulation costs in other chapters of the report. The third section identifies various decision typologies such as nonrational decisions, ambivalent decisions, and passive and active decisions. In the fourth section, various decision rules and decision-making models that represent the way individuals combine and weigh factors in decisions are examined. In connection with this discussion, limitations on rational models are covered. The fifth section discusses the more elaborate sequential model for fertility decisions. The sixth section discusses how the perspectives of the two spouses as well as other family and nonfamily members are weighed in a decision. The last section, finally, considers differences in the decision process between pre- and post-transition societies.

1. Perceptions of Supply, Demand, and Fertility Regulation Costs

Perceptions of Supply

The perceived supply of children depends on a woman's assessment of her

fecundity and of the chances of infant and child survival. With regard to perceived fecundity, individuals may deny susceptibility to pregnancy, recognize it as a statistical possibility but not a personal probability, or perceive direct susceptibility. Women appear more likely to err on the side of perceiving higher rather than lower fecundity: in comparison with studies of sterility in natural fertility populations at various ages, self-reports in survey data appear to considerably understate the true proportions sterile (Nortman, 1982). For instance, in a recent analysis of nine Contraceptive Prevalence Surveys conducted by Westinghouse Health Systems in Bangladesh, Colombia, Costa Rica, the Republic of Korea, rural and urban sectors of Mexico, and Thailand, reported infecundity among married women of reproductive age ranged from 6 percent in Costa Rica to 9 percent in South Korea (Nortman, 1982). Summary reports from selected World Fertility Survey (WFS) countries indicate that the proportion of women in union reporting that they think themselves and their husbands physically incapable of having a child ranges from 5 percent to 15 percent and of course varies by the age composition of the sample. In a reinterview following the Indonesian WFS, the reliability of this measure was assessed. Given the total proportion of women who provided similar responses in both surveys, the question appears to be reliable. However, the relatively high proportions of women for whom no answer was available (17-22 percent), or who could not respond to the question (11 percent), indicate problems of validity or reluctance to acknowledge subfecundity (MacDonald et al., 1978).

Fecundity is difficult to measure; it is influenced by heredity, health, age, and regularity of the menstrual cycle, and assessments must also take account of the complicating effects of frequency and regularity of

intercourse, duration of postpartum breastfeeding, spontaneous intrauterine mortality, induced abortion, postpartum infecundability, and sterilization. Women appear to base their judgments of fecundity on various criteria. In developed countries, the most significant criterion appears to be the time required to achieve conception. Other criteria include the pattern of the menstrual cycle and flow; the occurrence of a conception while using contraception, or the failure to conceive while not using contraception; maternal childbearing history; and current health conditions or medical tests (Miller, 1981b). In developing countries, there is very little research on the topic; one rural Mexican study suggests that two significant criteria are the time required to achieve conception and the number of live births. In addition, variation in beliefs on the interrelationship between exposure to intercourse and the probability of pregnancy were also reported for this sample (Sheilin and Hollerbach, 1981). The pattern of the menstrual cycle also appears to be significant, since it offers regular reassurance of nonpregnancy and indicates that the body is eliminating "impure" blood, a condition perceived as necessary for the maintenance of health; the latter belief is more widespread among older, less-educated, and rural women in the ten-country investigation conducted by the World Health Organization (WHO Task Force, 1981).

The second component of perceived supply is perceived infant and child survival. If mortality is viewed as high, couples must have more births in order to have the expectation of attaining any desired family size; on the other hand, higher perceived mortality may reduce the demand for surviving children, e.g., through increasing the costs of attaining a particular surviving family size. Perceptions are typically measured by asking

respondents to assess the number surviving to a specific age (such as 15) among a hypothetical number of births, sometimes the average for women in the area. Analyses relating perceptions to actual fertility behavior are scant and difficult to interpret. As Bongaarts and Menken (1982) note, it may also make sense to assess the number of surviving adult children (or sons specifically) when parents reach age 45 (indicating the supply of children as insurance against economic risks) and the number of surviving adult children when parents reach age 65 (indicating the supply of children for old age security). Respondents have not been asked such questions, however.

Perceptions of lower child survival have some positive effect on fertility preferences and behavior in Taiwanese townships (Heer and Wu, 1975, 1978), although research conducted in Guatemala, where mortality is higher, shows no association between perception of child survival and fertility desires (Pebley et al., 1979). It is difficult to separate the influence of this factor from that of many other influences on fertility desires and behavior, such as mother's age, parity, education, residence, and access to health services (Heer, 1982). Moreover, assessments of general probabilities of survival may differ from personal assessments of risk.

It might be expected that perceptions of general survival levels would be greatly affected by the experience of losing a child. However, those who had and had not lost children showed no sharp differences in the perceived value of children or family-size preferences in a study conducted among Javanese and Sundanese parents in Indonesia (Darroch et al., 1981). Part of the reason may have been that relatively large numbers of couples had experienced child loss. Differentials in perceptions that may affect fertility may occur only as child loss becomes rarer within the society.

That expectations of high mortality can be especially persistent despite change in actual probabilities is suggested by a study of Australian, Greek, and Italian parents in Sydney, Australia (Callan, 1980). Greek parents were the most concerned about the possible death of an only child and the concomitant loss of parental status; their fears about child loss were related to the high incidence of child mortality they had witnessed during their youth in rural Greece, rather than to their experiences in Australia.

Perceptions of Demand

Perceptions are also important with regard to demand for children. Various approaches have been undertaken to measure perceptions of demand, including direct measures of fertility desires and preferences; unfolding theory, especially for assessment of family-size ranges and sex preferences; research on the value of children; and attitude scaling to measure the subjective utility or expected value of children.

Survey responses on these measures are available for a wide variety of less developed country settings, and the evidence available suggests that these measures of perceptions are related to fertility behavior. Fertility desires are related to actual fertility (McClelland, 1982; Pullum, 1982); value-of-children indices predict fertility to some extent and vary according to the level of economic development and modernization within a country (Arnold et al., 1975; Fawcett, 1982). Perceptions of the value of children also differ by social class and parity, as do the weights parents attach to these costs and benefits in the process of decision making (Bulatao, 1979a, 1979b, 1981). Perceptions regarding the importance of sons and daughters also affect demand. Attitude scaling measures of the subjective utility or

the expected value of children satisfactorily predict actual fertility behavior or intentions, although most of the research, to be reviewed in a later section of this essay, has been conducted within developed-nation contexts. Finally, research has focused on a more difficult topic, estimation of the actual economic costs and benefits of children, primarily the labor contribution of children to parents within rural households.

Despite the varied research already undertaken on perceptions of demand, a few areas related to the perceived and objective utility of children require further clarification and evaluation. Investigation of perceptions of economic benefits and costs, especially educational costs, as well as socioemotional costs and benefits within economically homogeneous and heterogeneous settings, would be a useful complement to research on the actual economic contributions of children. Variation in perceptions among husbands and wives, and by parity and socioeconomic status should be examined. Although couples in the least developed nations show strong awareness of the economic values of children, and parents in developed-country settings stress socioemotional values, noneconomic benefits no doubt exist at all stages of development associated with alternative sources of status for women (Oppong, 1982).

Similarly, parental expectations of old age support from surviving children in less developed nations have been substantiated. However, data are scant on the salience of such concerns among couples during their child-bearing years, and on the actual contributions of children to old age support, such as financial support, social exchange, and intergenerational coresidence. The possible associations between perceptions of old age support and perceptions of spouse and child survival to various ages should

be investigated. Institutional social security systems, cooperatives, unions, and credit and savings institutions, if implemented on a large scale, may help to reduce but will not eliminate the economic value of children as sources of old age security through the establishment of alternative investment strategies. The impact of such programs on changing perceptions of the economic value of children needs to be examined (Lindert, 1982). Finally, there is limited evidence on objective parental reliance on children as a source of income when usual earnings are reduced because of environmental events, widowhood, or loss of land or employment, and the extent to which perceptions of such risks influence fertility behavior (Cain, 1981; Potter, 1982). The opposite situation—perceptions of improved living conditions and of the probability of social mobility, and their impact on fertility--also requires investigation.

Perceptions of Fertility Regulation Costs

The motivation to space births or terminate childbearing depends not only on perceptions of supply and demand, but also upon the perceived characteristics and costs of fertility regulation methods. Research on the costs of fertility regulation includes both subjective costs (normative and psychic costs, fears of serious and minor side effects) and objective costs (time, distance, and monetary costs involved in acquiring knowledge and access to fertility regulation and actual side effects associated with methods). Perceived costs of fertility regulation are more salient within less developed nations in decisions to initiate and continue contraception, but are amenable to change.

Monetary, time, and health costs of contraception in both developing and

developed nations are examined by Schearer (1982). Although monetary costs can have a significant effect on levels of use in developing nations, these should be offset by active public family planning programs, which considerably reduce the level of cost. Unfortunately, however, data assessing this impact are extremely limited, inconclusive, and sometimes contradictory. Data on the impact of perceptions of costs are even more limited, but demonstrate that in some societies, couples would prefer to pay moderate charges for contraceptives than receive them for low cost (Schearer, 1982).

Travel time, means of transport, and distance costs involved in the acquisition of supplies have recently been investigated through World Fertility Survey data measuring perceptions of these costs. Whereas assessments of time of travel can be obtained from most respondents, only a minority can estimate distance (Rodriguez, 1977). There is substantial evidence that limited availability of contraceptive supplies results in high fertility. Rodriguez (1978), analyzing the effect of perceived availability and accessibility of family planning services (knowledge of a nearby outlet), reported that current use of effective contraception among exposed women who desired no more children increased as perceived accessibility of services increased in Colombia, Korea, and Malaysia, but not in Costa Rica, where unmet need is uniformly low. However, for Colombia, Korea, and Malaysia, the effect of perceived accessibility was greatly reduced after controlling for various sociodemographic variables, especially place of residence.

With regard to health costs and benefits of contraception, all methods provide at least partial protection against pregnancy, thereby reducing the incidence of potential adverse effects of pregnancy and childbirth,

especially in developing nations. However, these potential benefits must be weighed against the major and minor side effects associated with the methods available for use. In developing nations, objective information on serious side effects or health hazards appears very limited; however, fears and misconceptions regarding both serious and especially minor side effects strongly affect contraceptive use, selection of particular methods, and therefore fertility. Approximately one-third of women in these countries who discontinue methods report minor side effects as the underlying reason, and drop-out rates far exceed those in developed nations. Attributes of contraceptives which are most significant in method selection are effectiveness, absence of side effects, desired duration of action, and length of time until return of fertility; convenience of use and route of administration are of far less importance (Marsella et al., 1979; WHO Task Force, 1980). Among a variety of contraceptive side effects, alterations in menstrual bleeding patterns are particularly significant since they are associated with many different types of contraceptives. The impact of misinformation and fears associated with minor side effects is likely to decline with the diffusion of information and services, a topic which should be empirically investigated. However, the significance of serious objective health hazards is likely to increase as levels of information and education increase (Schearer, 1982).

Frameworks relating to the various factors determining acceptability of fertility-regulating methods have been formulated (Freedman and Berelson, 1976). Despite these categorizations, systematic integrative models of normative and psychic costs have not been devised and tested in cross-cultural investigations. In standard classifications, these factors

are merely grouped together as personal reasons for method discontinuation, a category including personal, social, or cultural factors, as well as discontinuation for a desired pregnancy. The categorization does not provide sufficient data on the sociocultural and psychological reasons for termination.

Based on a variety of studies, Bogue (1982) attempts to estimate the prevalence of a cost (proportion of the population of reproductive age that experiences a particular cost) and the impact of a cost (the degree of association between the cost and contraceptive use). He concludes that major normative and psychic costs of contraception include fears of major and minor side effects of methods, anxiety over contraceptive failure, and the discussion of contraception with spouse. Other costs, such as threats to moral and religious beliefs, legitimacy of contraceptive use, insecurity regarding family status, and fear of infant deaths are moderately important. Although less well documented in the literature, other costs, such as threat to harmony in the extended family, discord between spouses, interference with sexual relationships, shyness at gynecological examination, and perceived risk of childbearing are comparatively minor, neither very prevalent nor very significant in affecting contraceptive practice.

However, in the absence of systematic data collection on psychic and normative costs associated with contraceptive nonuse and discontinuation, these conclusions must be considered tentative. Estimates of the prevalence and impact of normative and psychic costs will differ widely among different sociodemographic groups and have important programmatic implications for service delivery. Aside from the impact of these costs on current contraceptive practice, the impact of costs should be measured separately for

those who desire to space or terminate fertility, but are not using or do not intend to use a method; those who have previously used but have discontinued methods, especially after a short period of time; and samples of women that include potential acceptors of contraception excluded from the population of exposed women due to pregnancy or breastfeeding. The impact of normative and psychic costs of contraception should be higher within these subgroups as well.

Data on the perceived costs of abortion are much more limited and pertain to women who report previous use, or small samples of abortion patients, rather than to ever users or women of reproductive age (David, 1982). Although psychic costs are difficult to assess, U.S. data demonstrate that, for the vast majority of women receiving abortions, feelings of guilt and depression, when noted, are mild and transitory. In developing nations, where abortion is typically illegal, use is seriously underreported, but appears related to women's knowledge of service providers, accessibility to providers, methods utilized in abortion procedures, financial costs, period of gestation, and exaggerated fears of side effects associated with various contraceptive methods (David, 1982). Thus, accessibility, monetary, and health factors seem to be associated with abortion use in developing countries. Data on normative and psychic costs of abortion in developing nations are too scant to warrant even tentative conclusions, although the high level of underreporting is indicative of the normative costs associated with abortion in societies where it is not legalized.

2. Alternatives to Fertility

Fertility decisions, like all other decisions, involve choices among alternative behaviors. Some psychosocial models have incorporated perceptions of trade-offs between perceived costs and benefits of children and perceived costs and benefits of contraception and abortion, as well as perceived fecundity (Hass, 1974; Ryder, 1975; Steinhoff et al., 1971). Relatively few psychosocial models have examined perceptions of alternatives to fertility for the attainment of these values, especially in developing nations, in part due to the relative scarcity of such avenues. Psychosocial models which have included this dimension have been tested exclusively within the U.S.

As noted in one theoretical schema on motivations for and against childbearing, these motivations are in part determined by the value of children, alternative sources aside from children which fulfill certain values, the costs incurred (what must be lost or sacrificed) in order to obtain these values, and barriers and facilitators (Hoffman and Hoffman, 1973). Costs include factors such as consumption expenditures (education, food, clothing, medical care), a reduction in familial savings and alternative investment opportunities, and foregone opportunities for female labor force participation. Barriers and facilitators include such factors as socioeconomic status, community norms, and work and time demands.

High fertility is associated with the value provided by children in achieving economic status for women. These benefits include child labor, household assistance, old age security, maintenance of husband's economic support, and strengthened viability of kin involved in labor-intensive

production. Children also provide political status within the community, ensure kinship ties, and may increase women's familial influence and power through control over their labor, marital alliances, and fertility. Children can provide social status through the approval, prestige, and deference accorded to marriage and motherhood, greater seniority within the domestic group, and strengthened kinship ties. Finally, psychic satisfaction can be obtained through the companionship and love of children (Oppong, 1982).

All of these maternal role rewards are hypothesized as associated with pronatalist role expectations and behaviors. Alternative role rewards, that is, the expansion of alternative opportunities for economic, political, and social status, and psychic satisfaction and pleasure for men as well as women depend upon the level of economic development and social constraints imposed on sex role choices. These in turn are associated with the allocation of time and material resources to different roles and the perceived opportunity costs in time and money associated with childcare.

The shift from domestic to public spheres can be attained through a variety of alternative sources of status for women. For instance, the prevalence of employment opportunities for women in nonfamilial enterprises; an increase in female wage rates concomitant with rising educational attainment; reduction in the labor substitutability of children; and greater childcare constraints (due to reduced reliance on the extended family and siblings for childcare, the higher cost of childcare substitutes, and greater equality in the division of domestic labor) can raise the perceived opportunity costs of children at later stages of development (Standing, 1982). Employment opportunities can hence provide alternative sources of economic and political status previously provided by children and increase

motivation for fertility regulation.

Aside from occupational roles, Oppong (1982) suggests that greater political and social status and psychic satisfaction can be achieved through greater leisure time to pursue education, training, and personal pleasure, community and civic participation, and individual recreation outside the home. All of these alternative sources of status will raise the perceived opportunity costs of childcare through feelings of loss of freedom. When childcare is incompatible with these alternative roles, motivation to regulate fertility should increase. Finally, within the home, relative freedom from the constraints of kin, relatives, and spouse; shifts in the division of labor between husband and wife, with greater sharing of domestic labor; and development of companionate marital relationships can also reduce constraints on the selection of alternative sources of status, and provide psychic satisfaction and pleasure as well.

The key concern is the alternatives couples perceive for obtaining the rewards that children provide, or aspects of modernization that stimulate perceptions of higher time and money costs of children and childcare. The absence of such alternatives within developing nations is both the primary cause and effect of high fertility. The impact of such forces within communities can be assessed through psychosocial models which gather data on socioeconomic variables, current family size, family-size and gender preferences, the perceived costs and benefits of children, actual role behavior (best gathered through time budget data), preferred sex role behavior, and perceived constraints to alternative sex roles. Such constraints include availability and status of alternative roles, such as nonfamilial employment, civic or community roles, recreation; normative

factors (sex segregation of activities, freedom of movement for women and children); familial factors (household division of labor for domestic and childcare responsibilities, maternal time required for childcare, husbands' attitudes and marital satisfaction); availability, quality, and monetary costs of childcare substitutes; and availability, use, and perceived costs of fertility regulation.

Psychosocial research on the topic is limited and inferential, offering partial support for the relationship between alternative sources of status, the value of children, and fertility regulation. Using data from Ankara, Turkey and Mexico City, Bagozzi and Van Loo (1978) have tested with some success the proposition that socioeconomic variables (normative social structure and stratification) and economic constraints (income and price) influence fertility through their impact on social psychological processes within the family. These processes include the nature of husband-wife interaction (power, conflict, decision making, and marital satisfaction), which in turn determines family size. Research by Scanzoni (1975) in the urban United States also supports the proposition that more modern egalitarian family attitudes and exchanges are related to lower demand for children. Data from a national survey of the value of children to parents among American couples in the childbearing years examined subgroup differences to test the hypothesis that groups with few alternative means for satisfying a particular need will value children more highly for this quality. This hypothesis did receive some limited empirical support, although intensity of need was not considered in the analysis. For instance, low socioeconomic groups with less access to economic resources attached more importance to economic utility values than did others. Women with

traditional sex role definitions valued adult status more than others, and unemployed women gave more importance to fun and stimulation as a perceived value of children (Hoffman et al., 1978).

The complexity of perceptions of supply, demand, and regulation costs, and the degree to which they often differ from objective assessments and are influenced by alternatives to fertility, suggest the importance of considering the decision process as both psychological and social, rather than simply a balancing of economic utilities. Perceptions partly determine the types of decisions that are made, a topic that is considered next.

3. Types of Fertility Decisions

One approach to studying fertility decisions is to create typologies of decisions. The more important distinctions are discussed here. Nondecisions may be said to occur when a couple does not foresee that pregnancy results from particular actions, misperceives their fecundity, or lacks knowledge of fertility regulation. Passive decisions take place when restricted perceptions and particular habits or customs, institutionalized within the culture, reinforce the childbearing behavior functional for group survival or growth and leave individuals with little perceived choice (Hull, 1982). An alternative characterization of both situations is to say such couples are in a preawareness stage of decision making (Miller and Godwin, 1977); though they make decisions relating to marriage, breastfeeding, sexual relations, and infant and childcare that indirectly affect fertility, decisions directly relating to fertility goals are precluded by lack of knowledge. Another interpretation of passive decision making posits a

situation in which individuals or couples act according to internalized social norms regarding appropriate minimum family size or act on the basis of their assumptions about partners' fertility desires. In such situations, the benefits of childbearing are socially reinforced, internalized and recognized, but the relative costs and benefits of childbearing are not actively discussed and weighed nor are alternatives to childbearing until some later stage (Hollerbach, 1980).

For more active decision making to take place, a couple must be aware of a number of things: the probability of pregnancy, the possibility of regulating fertility, and the fact that costs and benefits are attached to the fertility outcome. Fertility may then be said to be salient to the couple (Hass, 1974; Shedlin and Hollerbach, 1981). Alternatively, the key factor in active decision making may be seen as the weakness of external incentives or internalized motivations to bear children. Individual perceptions of child costs and benefits may then be considered and weighed against one another and against alternatives to childbearing (Fawcett et al., 1972). Active consideration of the consequences of fertility behavior may result in a decision to regulate fertility or to have additional children; however, it may also result in an implicit decision to do nothing. In this case, through the process called behavioral drift, a series of small decisions may lead by default to an unintended major decision. For instance, a series of decisions to have unprotected intercourse may eventually produce an unintended pregnancy (Neal and Groat, 1980). Such decisions are sometimes characterized as ambivalent. Ambivalence is most noted among the high proportions of women who state that they do not want additional children but are not practicing contraception. High ambivalence about the probability or

desirability of pregnancy, about a sexual partner and couple communication, and about the medical, social, and psychological implications of contraceptive use have been found in studies of unwanted pregnancy among adolescents and abortion patients in the U.S. (Kantner and Zelnik, 1973; Kellerhals and Wirth, 1972; Kerenyi et al., 1973); similar observations have been made for multiparous Mexican women considering contraception (Shedlin and Hollerbach, 1981), and for Colombian women considering abortion (Browner, 1979). Women feeling such ambivalence are also more likely to experience failure when they do practice contraception (Jones et al., 1980).

Decisions may also be nonrational if individuals act against their better interests; regret over previous decisions may be seen as indicating irrationality. When one individual has the power to enforce a decision on another, decision making may be termed coercive, although even this behavior involves elements of choice. Also, decisions can be categorized as joint if reached by two or more individuals on the basis of accommodation, compromise, compliance, or mutual agreement, or unilateral if made by one or more individuals in conflict with the desires of another, either openly or surreptiously (Hollerbach, 1980).

4. Rules and Models for Fertility Decisions

Research on how individuals choose among alternative fertility behaviors and how they weigh the different perceptions involved has led some to propose simple rules and more complex psychosocial models. Leibenstein (1981) has proposed a hierarchy of rules for fertility decisions: choice may be based on some ethic, or on some definition of conventional behavior, or on partial

calculation, or on full calculation. The first two of these alternatives will be considered together below, and then the second two. More complex decision models generally assume some degree of calculation. Among these, those most frequently applied to fertility behavior—though mainly in the United States—are subjective expected utility, expectancy x value, and judgment-value-integration-choice models.

Choice by Ethic or Conventional Behavior

In Leibenstein's (1981) hierarchy of decision rules, the first two strategies of choice—on the basis of some ethic and on the basis of some definition of conventional behavior—are influenced by cultural or normative factors. Recourse to either of these rules involves following precedent, and allows the individual to avoid the effort of continual decision making and monitoring of consequences. Fertility decisions that arise repeatedly, such as those related to coital frequency or contraceptive use, are likely to follow one of these rules (Hull, 1982); those that are unique (such as age at first coitus), infrequent (marriage), or regarded as serious (abortion or infanticide) are more likely to involve one of the other rules to be discussed next.

Maximization of Utility and Satisficing

These two strategies have received the greatest attention in the theoretical literature. Maximization of utility, or full calculation in Leibenstein's terms, involves comparing alternative strategies and selecting the best. Satisficing, or partial calculation, involves selecting some satisfactory alternative that meets minimum expectations or demands, though

it may not be the best among all possible options (Demeny, 1970; Leibenstein, 1981; Simon, 1979). The focus in satisficing is not on absolute rationality, but on rationality given constraints on information, time, and perceptions. The range of options considered in satisficing may be limited for various reasons. The individual may not consider options that violate his or her image of family life, may exclude the consideration of alternatives because of social pressure, or may perceive certain limitations to the possibility of upward mobility (McNicoll, 1980).

Although theories abound, only limited research exists on the degree to which these two strategies are used, and none of this research pertains to fertility behavior. In a small-scale study involving comparative ratings of films, Mills et al. (1977) found a tendency to use a maximizing strategy in situations offering few alternative choices; satisficing was more prevalent in situations offering a larger number of options, when the task of comparing those options was thought to be arduous or possibly to exceed the limits of information processing, and when choices were presented in sequential order.

The Subjective Expected Utility Model

More complex decision models all assume calculation by individuals of the costs and benefits associated with childbearing and fertility regulation. In the subjective expected utility (SEU) model, consequences of behavior are assumed to vary according to their desirability or utility (or the degree to which they are expected to be liked or disliked) and their subjective probability (the perceived probability that they will actually result from the particular behavior). The SEU of a particular behavior is the sum across all relevant consequences of the products of desirability and subjective

probability. SEU and behavior are reciprocally related: SEU determines when behavior occurs, and the behavior itself produces modifications in SEU through the incorporation of new consequences that were not originally expected, or through changes, based on actual experience, in the subjective probability and desirability associated with particular consequences; a modified SEU would then influence subsequent behavior (Edwards, 1954; Lee, 1971).

The theory has not been applied in developing countries. It has been applied in assessing American husbands' and wives' positive and negative birth planning values at different parities and the ability of this hierarchy of values to predict actual fertility within limited time periods (Beach et al., 1976; Townes et al., 1977). In the small sample studied, there were few pregnancies or attempts to become pregnant within a year among couples for whom no pregnancy was predicted by the SEU measures; among those for whom maximum SEU would be derived from having a child, approximately half reported a pregnancy attempt. Another investigation of sexual behavior among American adolescents (Baumann and Udry, 1981) also generally confirmed the SEU model. SEU scores were related to sexual behavior among both men and women; however, SEU scores did not completely explain racial differences in sexual intercourse among males.

The Expectancy x Value Model

The expectancy x value model was originally developed by Fishbein (1972; also see Fishbein and Jaccard, 1973). It posits that behavioral intentions are determined by both attitudinal and normative variables; in the equation $BI = (\sum B_i A_i)w_1 + (\sum NB_i MC_i)w_2$, an individual's intention to perform some

behavior (BI) is a function of that individual's beliefs about the consequences of performing the behavior (B_i) and the evaluation of those consequences (A_i), as well as his beliefs about what others think he should do (NB_i) and his motivation to comply with those others (MC_i). Empirically determined weights w_1 and w_2 reflect the relative importance of each component in the determination of BI.

In empirical studies, behavioral intentions may be represented by intentions to use contraception in general, to use a particular method, or to have a child. Rating-scale measures of beliefs (B_i and NB_i) and values (A_i and MC_i) are generally obtained, combined and correlated with measures of intentions to test the model. The first sum of products corresponds to individual utilities, whereas the second corresponds to social norms (Jaccard and Davidson, 1976).

The Fishbein model has important limitations. The consequences to be evaluated are not specified by the model (Adler, 1979). Moreover, since multiplication is required, the model assumes that ratings are on ratio scales, which is seldom in fact the case (Schmidt, 1973). Furthermore, the model assumes rational decision making and maximization of utility, thus imposing a decisional framework that may not in fact be accurate. One advantage of the approach, nevertheless, is its incorporation of a normative component to constrain individual choices.

The model has been used repeatedly in U. S. studies to explain various family planning practices, as well as the demand for children (Cohen et al., 1978; Davidson et al., 1976; Fishbein and Jaccard, 1973; Fisher et al., 1976; Jaccard and Davidson, 1975; Werner et al., 1975). Behaviors or intentions predicted with some success by the model over fairly limited time spans (two

or three years) include having another child or a two-child family, using birth control pills, contraceptive purchases, types of contraceptives chosen, and the acceptability of actual and hypothetical male contraceptives.

Cross-cultural research based on the Fishbein model is extremely limited. Davidson et al. (1976) compared an American sample with two Mexican samples: college students and low-status women in Mexico City. Intentions to have a two-child family, to use birth control pills, and to have a child in the next two years (among the married women) were predicted as well in the Mexican samples as in the U.S. sample, the multiple correlation coefficients ranging from 0.66 to 0.87. Interestingly, the attitudinal component was the better predictor of intentions for the U.S. and Mexican college samples, whereas the normative component was the better predictor of intentions among the low-status Mexican women. Thus, the appropriate weights of the components of the model vary from sample to sample.

Finally, some research indicates that this model is less effective in predicting a behavior when the individual has no prior experience with that behavior; when the behavior is not directly within the individual's control; when the measure of intention is more abstract; and when the interval between measurement of intention and behavior is longer (Jaccard and Davidson, 1975; Davidson and Jaccard, 1979).

The Judgment-Valuation-Integration-Choice Model

The final model of the fertility decision-making process consists of four major stages: judgment, during which the decision maker identifies the possible consequences of a behavior; valuation, in which each perceived consequence is assigned some subjective value according to its desirability;

integration, in which the values of the consequences are combined to form an overall evaluation of the behavior; and choice, in which the individual compares the overall evaluations of a number of behaviors and selects the optimal behavior. Many decisions will be suboptimal because of errors in judgment. Moreover, since individual differences can exist at each stage of the decision sequence, the same choice can result from different sets of beliefs, values, and integration rules (McClelland, 1980).

In particular, integration rules are allowed to vary across individuals. Three main types of rules are posited: additive, in which the overall evaluation of each alternative is the sum of the values attached to each of its consequences; conjunctive/additive, in which an individual eliminates all alternatives with some unacceptable consequence and then evaluates the remaining alternatives according to an additive model; and one-consequence, in which the comparisons across behaviors are based on only one consequence and respondents are indifferent to all other consequences.

In a first test of the model, the framework has been applied to clients of a U.S. family planning clinic (Nickerson et al., 1981), who were asked about their judgments of three characteristics of contraceptive methods; their preference orderings of alternative behaviors (to provide integration rules), from which their evaluations of the consequences were inferred; and their actual choices, represented in rankings of birth control methods from most to least preferred. The framework accurately described the contraceptive decision-making process of 56 percent of the respondents able to complete all required tasks. The largest group used the additive integration rule, fewer used the conjunctive/additive rule, and a few used the one-consequence rule. Errors in response were attributed to factors such

as the restricted set of consequences being considered, lack of prior thought or low salience of the issue to respondents, and difficulty in understanding the task.

Limitations to Rationality

Except for decisions by ethic or conventional behavior, all the rules and models described involve some degree of rationality. It is important to note various impediments to rational decision making that may make particular models less applicable.

First, the consequences or outcomes of actions are not always known and sometimes cannot be taken into account. For instance, under environments of high mortality, a decision to terminate childbearing must be weighed against the unknown possibilities of future widowhood or child mortality. Possible loss of income due to environmental factors may also produce a situation of unknown future risks, and fertility regulation may therefore seem inappropriate (Cain, 1981); the use of fertility regulation itself may have unknown associated health risks. Fertility decisions which cannot take all consequences into account may in retrospect appear irrational.

Second, individuals differ in their ability to acquire accurate information on probabilities (Pitz, 1980; Pitz et al., 1980) and may inaccurately judge the likelihood of different consequences (Tversky and Kahneman, 1974). For instance, cultural differences have been noted in the probability parents attach to having a son or a daughter; these perceived probabilities can systematically deviate from the true ones. When gender preference affects fertility, these cultural variations in perceptions can have some effect (McClelland and Hackenberg, 1978). Similarly, individuals

differ in their assessments of the probability and severity of side effects of fertility regulation methods and the efficacy of methods in preventing pregnancy (Bardwick, 1973; Miller, 1975). For instance, contraceptive use in Egypt is comparatively low among respondents who are unsure of or fatalistic about their ability to control family size (Bogue, 1982). Actual experience and knowledge of recent occurrences among acquaintances have the greatest effects on these perceptions (Tversky and Kahneman, 1974). When the probability of contraceptive failure or side effects is assessed from acquaintances' experiences or by analogy to other types of health risks, predictable biases can result.

Third, collecting information on consequences and probabilities is time-consuming, and the value of the information may be outweighed by the costs of its collection, especially in developing nations (Meeker, 1980). Better-educated individuals or those with greater exposure to the mass media can more easily obtain accurate information on the costs of contraception. The less-educated may bear higher information costs. Information costs have important effects: the kind of information available prior to use affects satisfaction with and later perceptions of contraceptive methods and therefore continuation of use (WHO, 1977). Balanced information on the advantages and disadvantages of contraceptive methods and free choice among them also lead to different choices than when decisions are influenced by the preferences of clinic personnel (WHO Task Force, 1980).

Fourth, the decision-making process itself has other associated normative and psychic costs, such as the acknowledgment it requires of sexual activity, shyness associated with medical examination, the need to discuss family planning with the partner or with others, and fear of disclosure.

These costs, discussed by Bogue (1982) may also lead to less-than-optimal decisions, and are assumed to be important psychic costs of fertility regulation in developing nations.

Fifth, fertility decisions may involve a mix of consequences, costs, and benefits that produces a situation of ambivalence. For instance, decisions to regulate fertility may be weighed against fears of abandonment, community censure, or familial discord (Shedlin and Hollerbach, 1981). Even when such consequences do not determine the decision, they can increase the individual's insecurity about it. Ambivalence and the absence of clear-cut decisions may mean a failure to maximize utility or may lead to the surreptitious practice of contraception, which also involves psychic costs associated with risk taking.

Finally, the degree of rationality may depend on whose perspective is being considered. Meeker (1980) contends that marital fertility decisions generally attempt to maximize the total reward to all members of the household. Caldwell (1982) cautions, however, that it may be the living standard of the older generation or satisfaction of one member of the nuclear family, such as the husband, that dominates decision making. The consequences of having several people involved in a decision will be discussed further after consideration of another complication in the application of the preceding rules and models—the possibility that decisions on ultimate fertility are made sequentially and are subject to revision.

5. Sequential Fertility Decisions

Fertility decisions are linked to the life course. Each birth may be influenced by a different set of motivational, cultural, and family conditions, and fertility decision making therefore involves a complex series of decisions over the life cycle. The sequential or successive decisions approach investigates this premise and attempts to determine whether and how influences on fertility decisions change (Namboodiri, 1982). In principle, the rules and models just described could be applied sequentially to a series of fertility decisions, but the focus in research on these models has been on confirming them rather than using them to understand changing decision patterns.

One critical way in which decision patterns may change in the life course is in the impact of norms. Empirical evidence indicates that there is widespread agreement within and across societies on norms prescribing minimum family size, but far less agreement on maximum norms (Mason, 1982). Fertility plans and behavior before a couple attains the norm may be determined primarily by normative pressures; for those above the floor, however, the absence of a maximum norm may mean much greater individual discretion and more recourse to specific cost-benefit calculations. For instance, middle-class couples in a longitudinal U.S. study reported feeling under pressure from family and friends in decisions to remain childless or to have only one child, but not in decisions about a second child (Miller, 1981b). There is conflicting evidence about this proposition, however (Bulatao and Fawcett, 1981), possibly because normative pressures are subtle and may not be recognized as such by those being influenced, or such

pressures may simply be internalized and expressed as personal motivations; the institutional contexts of such pressures are complex and difficult to measure through survey interviews; and subgroups within a society may differ in their normative family-size thresholds (Namboodiri, 1982).

Changes in the influence of socioeconomic characteristics on fertility decisions across parities have been studied mainly with cross-sectional data from the United States. A number of these studies have consistently shown that permanent income has a positive effect on the propensity to have additional children at lower parities, but a negative effect at higher parities (Bulatao and Fawcett, 1981). The changing influence of other characteristics has also been investigated with somewhat less consistent results (Namboodiri, 1982).

The revision of fertility plans is also of concern in the sequential approach. Namboodiri (1982) suggests that implementation failures are the main cause, and attributes these largely to fecundity impairment, marital disruption, child loss, and differences between sex preferences and actual family composition. In addition, he suggests, plan revision may be due to changes in the extrafamilial and familial contexts of reproduction. The former pertains to social and geographic mobility, and the latter to family living arrangements, the wife's extrafamilial involvement, and the marital power structure. With few exceptions (Bulatao, 1981; Bulatao and Arnold, 1977), the research on sequential decision making has been undertaken in developed nations, and has not used longitudinal data.

6. Communication and Power in Decisions

Having children requires two people, but they are not always equally involved in the fertility decision. This section examines how communication and the relative power of the spouses affect decisions. The most frequently investigated question in this area is how these factors affect decisions on family size; also considered in the literature are the effects of communication and power in decisions on contraception and abortion (Beckman, 1982). This section considers, finally, the roles other people besides the couple play in fertility decisions.

Couple Communication and Fertility

The research on couple communication and fertility has been handicapped by two problems: the measurement of communication and the treatment of communication as static (Beckman, 1982). First, within the typical fertility survey, complex concepts such as marital communication, communication on fertility-related issues, and social power generally receive only cursory attention. Research on communication has relied on responses, usually the wife's, about general communication, previous discussion of family-size preferences or fertility regulation, the frequency of discussion, or the initiation of discussion. Spouse agreement on family-size and family planning preferences, as reported in various studies, may be based on discussion, simple coincidence, or projection of individual preferences. Research comparing husbands' and wives' responses is limited, but studies using this approach indicate that discussion is not used that extensively and that joint fertility decisions do not predominate (Coombs and Chang, 1981;

Coombs and Fernandez, 1978; Gadalla, 1978; Hill et al., 1959; Yaukey et al., 1967).

On the second problem, the examination of the relationship between communication and fertility at one point in time presents communication as static, rather than a dynamic process subject to change. Communication has different meanings depending on its timing: in certain situations, casual discussion may indicate the expectation of a large family or a lack of knowledge or inaccurate knowledge about fertility regulation and the monetary and health costs of contraception. Communication may be difficult because of the sensitivity of the topic, feelings of shyness or modesty, and fear of infidelity or of challenging the husband's authority; unilateral fertility regulation may then be more likely. Unilateral use of fertility regulation is dependent in part upon the relative autonomy of partners (number and stability of relationships), the degree of economic dependency in the relationship, and the availability of such methods.

Communication may be absent for several reasons, but even in its absence there may still be consensus on fertility behavior. This may be the case, for instance, where unquestioned power is vested in one person and issues are therefore not discussed (Caldwell, 1982). Apparent consensus may actually mean that few family members are in a position to challenge the decision maker. If the decision is made not to control fertility, it may be very difficult to identify the decision maker in pretransition settings or in the early childbearing stage in transitional settings.

Where communication is present, on the other hand, the evidence supports the conclusion that it is positively related to contraceptive use, duration, and effectiveness of use, and negatively related to the demand for children

and fertility preferences (Beckman, 1982; Bogue, 1982). A few studies do suggest, however, that discussion follows rather than leads to contraceptive use, associated with unilateral decision making and the possibility of early method discontinuation. Communication is assumed to lead to greater empathy and increase a couple's ability to act together to achieve goals. Thus it is not the mere occurrence of the communication, but the quantity, quality, content, and timing that are significant. The two most important determinants of the frequency of fertility discussions, in a U.S. study, are the length of time since the birth of the last child and how soon the next child is expected (Miller, 1981b).

Marital Power, Dominance, and Fertility

Studies of power and dominance are similarly handicapped by the superficiality of the measures employed; these typically rely on the wife's assessment of final decision-making power over aspects of family life, including finances, childrearing, and leisure time pursuits. The research on this topic may be reviewed from two perspectives: the effects of egalitarian decision making on fertility and the resolution of disagreement or conflict.

Egalitarianism. One general hypothesis has been that egalitarian decision making, which allows the costs women bear to be weighed more heavily, influences fertility negatively through lowered demand for children and earlier and more effective use of contraception. As Hull (1982) notes, younger couples in developing nations tend to have more egalitarian decision styles than their elders (Cowles and Chang, 1981; Fox, 1975; Gupta, 1979). However, studying this relationship is complicated by possible reverse

effects: having many children, particularly sons, may increase the wife's or the husband's authority (Beckman, 1982; Oppong, 1982). Another complication is that changes in power may occur over the life cycle that do not relate to fertility. Thus relevant control variables such as age and marital duration may interact to cloud the relationship between power and fertility.

Weak or nonsignificant relationships between decision-making power and contraceptive use are generally reported (Beckman, 1982). Even those studies reporting a relationship between male dominance and cumulative fertility, such as Hill et al. (1959), show only small correlations. However, much of the research to date (Hass, 1971; Hill et al., 1959; Liu and Hutchinson, 1974; Weller, 1968) refers to developing countries in which, at the time of the survey, coitus-dependent methods, requiring greater motivation and cooperation for use, were still comparatively common, and the questions used to measure decision-making power are not highly correlated with one another (Hass, 1971).

Another approach in this area is to determine the relative contributions of husbands and wives in specific reproductive behaviors: this has been typically applied to cross-sectional U.S. data. Neal and Groat (1977) report that using both husbands' and wives' alienation scores improved predictive ability over using scores for each spouse alone, and that husbands' scores often predicted as well as wives'; nevertheless, the majority of studies, although few, do not support the conclusion that adding data from husbands is worthwhile for investigations of fertility in the United States. Though two-sex models are better predictors than one-sex models, the differences are not great. It is typically reported that female-only models are better predictors than male-only models, especially for white U.S. couples (Fried

and Udry, 1979; Fried et al., 1980). Townes et al. (1977), comparing the ability of wives', husbands', and both spouses' SEU scores to predict the occurrence of a pregnancy among well-educated white couples, reported that a model using an average of wives' and husbands' scores predicted about as well as wives' scores alone, but that husbands' scores alone did not predict as well. The influence and dominance of husbands and wives in fertility decisions may also differ within subgroups of a population, and be masked in aggregate comparisons (Fried and Udry, 1979).

Namboodiri (1982) also notes that there is disagreement on whether marriages begin on an egalitarian footing and evolve until each spouse is dominant in selected domains, or whether most marriages begin as wife-dominant but become egalitarian or husband-dominant later in the life cycle. If either speculation is correct in a given society, it is plausible to expect fertility decisions to be monopolized by the husband or the wife at different stages in the life cycle. Fried and Udry (1979) reported that, among a sample of U.S. couples, wives' preferences better predicted fertility outcomes than husbands' preferences at parity one. At parities two and over, wives' and husbands' preferences were about equally important in predicting attempts to become pregnant. Although this particular study indicates that parity-specific models are somewhat better than all-parity models, other research shows conflicting results (Fried et al., 1980; Miller, 1981b).

Resolution of Disagreement and Conflict. Research in developing countries generally supports the view that contraceptive use is more prevalent and continuous when the husband approves, particularly within lower-class or less-educated subgroups (Beckman, 1982). Husband's approval is also related

to communication between spouses about family planning and accounts for discrepancies between wives' motivations for fertility control and couple contraceptive behavior (Card, 1978). In the absence of disagreement or conflict, however, it is difficult to tell whether approval by either spouse is the determining factor in fertility decisions. Some research therefore focuses specifically on conflict.

The evidence reviewed by Beckman (1982) regarding whether husbands' or wives' views prevail in situations of disagreement is contradictory. Beckman attempts to reconcile contradictory findings by hypothesizing that profertility decisions are controlled by the husband in high-fertility societies, and antinatal decisions are dominated by the wife, who controls most methods of contraceptives in lower-fertility settings.

By contrast, other research in transition and post-transition societies supports the influence of wives in both pronatal and antinatal decisions. For instance, Coombs and Chang (1981), analyzing follow-up data on fertility over a four-year period, conclude that in cases of disagreement, the wife's attitude prevails, especially if she holds stronger beliefs about the future security and status to be derived from a large family and from sons. A small-scale study of U.S. couples (Miller, 1981a) noted that in situations of strong disagreement, decisions were commonly postponed until the dissenting spouse was ready for childbearing or a decision was made against childbearing. Women were more influential than men, tending to take a strong position with regard to childbearing, either for it or against it; men tended to be more analytic, more inclined to consider the costs and benefits of children and the general effect that childbearing would have on their lives, thereby tending toward greater neutrality or ambivalence. Men were also less

affected emotionally by failure to achieve conception. A larger longitudinal U.S. study of reproductive decision making, which showed that initial disagreement on decisions to have a first or second child was relatively common, also found the majority of wives reporting that they had been more influential than their husbands in the decision to have children (Miller, 1981b).

Substantial disagreement about childbearing may be settled in several ways. As outlined in a recent theoretical paradigm on bases of power (Hollerbach, 1980), Miller's (1981a) U.S. study suggests that acquiescence by one spouse may be justified as an attempt to avoid major marital problems or avert divorce, or as an exercise in altruism or an acceptance of the legitimacy of the spouse's reasons; it may also be rooted in emotional dependency on the partner. Less frequently, Miller (1981a) notes, neither spouse acquiesces, and one spouse may take unilateral action (such as having a vasectomy or an abortion) or deliberately take risks while contracepting in order to have a child.

Which spouse wins a disagreement may depend partly on status differentials between the spouses. Differences in age, education, and actual or potential earning power may affect the influence the husband and the wife have over fertility decisions. The research on the effects of education, income, and female employment on fertility is discussed elsewhere (Cochrane, 1982; Mueller and Short, 1982; Standing, 1982). However, there is little developing-country research on the implications of status differentials between spouses for relative power and for fertility decisions.

The Influence of Kin and Nonkin

Fertility decision making in pretransition societies need not be the monopoly of the biological parents. Caldwell (1982) argues, in fact, that in such societies the biological parents have little say; the older generation, who control patterns of production, the consumption of food, medical care, and other items, and exchanges of goods within the household, also control fertility. If fertility is advantageous to these people, the interests of the biological parents may be overridden, according to Caldwell. However, little research exists to confirm the applicability of Caldwell's view to different societies.

The influence of the elderly on fertility decisions depends, obviously, on whether they survive. In pretransition societies, female survival is lower at all ages, and elderly males are more likely to have influence. In transitional societes, female survival is more likely than male survival among the elderly, and the wife's mother or mother-in-law may be more likely to exert influence. The influence of the elderly, which may be assumed to be pronatalist, should be greater in rural areas, among the landless or land poor, where patrilocal rather than neolocal residence and patrilineality prevail, and when the surviving children are few.

Decisions may also be influenced by other relatives or by extrafamilial sources, including neighbors, peers, community leaders, health professionals, and state authorities. Hull (1982) notes three ways in which such sources influence decisional style: by social consensus transmitted to the individual through socialization; by shared value judgments on the propriety of fertility-related behavior and the imposition of sanctions; and by advice and counsel.

The influence of other individuals in fertility decision making is difficult to corroborate through survey research. As previously noted, social pressures may simply become internalized and expressed as personal motivations, expressed in such perceptions as minimum family-size thresholds. Alternatively, individuals may be reluctant to express such influence, especially pronatalist pressure or opposition to fertility regulation, thereby revealing familial conflict. Some studies indicate cases in which kin as well as nonkin appear to exert minimal influence; however, complementary data from rural areas are unavailable. For instance, in a large-scale study of urban Mexican men and women, most men (89 percent) and women (75 percent) who had discussed family planning with their spouses reported no outside influence on the decision to use contraception (PROFAM-PIACT de Mexico, 1979). The Value of Children study also reports that the majority of respondents in each country covered consider social pressure and the influence of moral and religious prescriptions as unimportant in relation to their fertility preferences (Arnold et al., 1975; Bulatao, 1979a).

7. The Fertility Transition and Decision Making

Much of the foregoing discussion has been based on research in developed countries; comparable research on fertility decision making in developing countries is often lacking. Not surprisingly, there is little evidence on which to base a discussion of changes in fertility decision making in the course of the demographic transition.

Hull (1982) argues that the nature of the decision process is related to

the individual's interactions within his or her social setting. Societies undergoing cultural change, particularly in family relations, will necessarily change in the way fertility decisions are made. The resultant changes in fertility behavior may be far greater than those expected as a specific consequence of economic change. Conversely, it is possible that fertility decision-making processes and behavior will remain relatively stable despite substantial economic changes.

Despite the lack of hard evidence, alternative views of pre- and post-transition fertility decisions may be reviewed. These perspectives are contrasting and highly generalized; their application to any specific case requires much more elaboration than can be provided here.

The first view is that there is no basic change between pre- and post-transition decision making: in both settings, couples are conscious of the economic consequences of childbearing and respond essentially to these. Family-size preferences reflect calculations of the potential exchanges between parents and children, including costs and benefits that are not strictly economic. Some degree of economic rationality is applicable both before and after the transition. Caldwell (1982) adopts this view in essence, in his argument that the direction of the net transfers between parents and children is primary, both before and after the transition, in determining fertility. There are further complications to Caldwell's view, however, which will be discussed below. Also consistent in principle with the view that the basic features of decisions do not change is Lindert's review (1982) of the empirical evidence on the economic value of children. Lindert focuses on the shift from time-supplying to time-intensive children, and on the effects of rising prices of staples and declining prices of luxury

goods in producing an initial increase and subsequent decline in the demand for children.

A second view is that there is some threshold before which attitudinal inertia prevents any conscious individual control of family size and after which calculation comes to underlie most fertility decisions. Until this threshold has been passed, couples only regulate their fertility in conformance with traditional rules of marriage, sexual relations, and breastfeeding, and do not perceive the costs and benefits of children. In this situation, fertility is affected by supply factors rather than by explicit decisions. The threshold might be a supply-demand crossroads (Easterlin, 1975), at which the determinants of fertility change from the supply of children to the demand for children. This threshold is reached when the desired number of children declines below the attainable number. Alternatively, the threshold might be seen as the point at which fertility regulation become salient (Bass, 1974; Shedlin and Hollerbach, 1981). Once couples are aware of the possibilities for controlling fertility, fertility decisions may change in character. Decisions before the threshold might be characterized as nondecisions or passive decisions, or, following Liebenstein (1981), as decisions governed by ethic or conventional behavior. After the threshold, more calculation may be involved.

Empirical research on this view is limited. For traditional societies, some literature supports the hypothesis that norms regarding family-size preferences are less significant in regulating fertility than those regarding the proximate fertility variables, such as age at marriage and postpartum sexual taboos (Lee, 1977; Lesthaeghe, 1980; Mason, 1982). However, even in the least developed societies, couples show strong awareness of the economic

and noneconomic benefits and costs of children (Fawcett, 1982), calling into question the view that decisions are entirely passive. The salience of these costs, especially in early decision making, may be the more significant factor.

Part of Caldwell's argument (1982) deserves elaboration as a third alternative view. Although Caldwell sees the basic nature of fertility calculations, rooted as they are in net transfers, as essentially unchanging, he also argues for other changes in the decision process. He sees change as taking place in the social relations underlying the economic transfers: family relations change in the direction of reduced age and sex differentiation, lowering the economic value of children and encouraging fertility regulation. In developing nations, he sees such changes in family relations as occurring through the direct influence of Western missionaries and Westernized administrators, new elites, media, and education systems. He argues further that the identity of the decision makers changes, from the older generation to the couple themselves.

None of these views of the linkage between the transition and decision processes has much empirical support so far.

8. Conclusion

Empirical research on fertility decision-making processes offers alternative perspectives on how the supply of children, demand for children, and costs of fertility regulation are perceived and weighed by individuals. However, few studies have examined these perceptions simultaneously or included alternatives to fertility as a means to fulfill the economic,

political, and social status or psychic satisfactions provided by large families. Research on the supply of children (perceived fecundity and child survival) is extremely limited, especially in developing nations. In contrast, there is abundant research on the costs and benefits of children and the monetary, time, and health costs of fertility regulation. Systematic data collection on the prevalence and impact of normative and psychic costs of contraception and abortion has not been undertaken.

Analysis of the rules of decision making, or the way individuals combine and weigh the consequences of alternative behaviors, has relied quite heavily on theoretical schemas of nondecisions, passive or irrational decisions, ambivalent decisions, and decision making guided by conventional behavior or ethic. More careful consideration of consequences by the individual may promote selection of that action which maximizes overall utility or satisfices. Empirical application of statistical models of decision making to fertility or fertility regulation behavior has also been attempted. A recent model, the judgment-integration-valuation-choice model, which specifies a variety of rules by which individuals integrate the perceived probability and desirability of the consequences of alternative actions, is an improvement over previous models that do not allow variation across individuals in decision rules. Nevertheless, the utility and applicability of this more recent model is reduced by its complexity. Moreover, with the exception of expectancy x value theory, there is little recognition in the various models of the influence of extrafamilial or normative factors, which are more significant in pretransition and transitional societies. Finally, all the models assume that decision making is a rational process in which individuals select the action with the highest expected value. Various

impediments to rationality that have been discussed call this assumption into question. Thus, the greatest utility of all these models may be that, when they are applied empirically, they lead to identification of those consequences which are perceived as probable and evaluated as strongly desirable or undesirable by individuals considering alternative fertility choices.

Research on sequential decision making focuses primarily on changes in the decision-making process below and above the normative family-size floor and changes in the determinants of fertility at different parities. Differences in normative family-size thresholds within subgroups, variation in maximum family-size norms, and plan revisions and plan-implementation failures complicate the study of factors influencing decisions at each birth order.

Research on communication and power has been handicapped by measurement problems and the lack of longitudinal data, although recent formulations of the concept of relative power or dominance should advance this area of study. The relationship between egalitarian decision making and fertility is complicated by the likelihood that these variables have reciprocal effects: greater egalitarianism may influence fertility negatively, whereas having many children, particularly sons, may increase the wife's or husband's authority in the family. In transitional societies, attempts to measure the influence of relative power on fertility are more useful if they focus on the point at which a couple first considers fertility regulation or on situations of disagreement on fertility goals and regulation. Research has consistently shown that contraceptive use is more prevalent and continuous when the husband approves of its use, particularly among the lower-class or the

less-educated; husband's approval is also related to communication about family planning between spouses. Within post-transition societies, the dominance of wives in both prenatal and antinatal decisions has been noted. However, differences in relative power and influence may exist within different subgroups. Within-couple status differentials in age, educational attainment, and income may also affect marital power patterns in situations of disagreement over fertility goals and regulation in both transitional and post-transitional societies.

Various views exist on changes in fertility decision making in connection with the demographic transition from high to low fertility. The decision process may not change in essentials, or may change radically from passive to active decisions when a threshold of economic consciousness is reached, or may change in a number of other ways, such as in the identity of the primary decision makers.

Research on fertility decision-making process requires data, ideally longitudinal, to trace shifts in the content and process of decision making within different cohorts, as well as across the life cycle. However, focusing on decisions can still be useful in cross-sectional studies of apparently irrational outcomes, such as unwanted births or unregulated fertility when regulation seems called for. Emphasizing the perceived rather than objective consequences of behavior, the subjective rather than actual probabilities of their occurrence, and the way competing preferences among family and nonfamily members constrain decision making or must be reconciled will explain fertility behavior in a way that may be nonrational as regards community interests, but rational according to individual perspectives. Investigation of changing decision-making styles within communities

underpoing social change can provide insight into the institutional and situational factors which stimulate a shift from passive or ambivalent to active decision making on the basis of personally defined goals.

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