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A Theory of the Value of Children*

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This paper uses a non-standard value assumption—uncertainty reduction—to explain parenthood. We begin by reviewing the inadequacies of normative and standard rational choice explanations of shifts in fertility behavior. Then we propose a theory of the value of children based on the uncertainty-reduction assumption. Next we generate a range of hypotheses that follow both from this assumption and from a subsidiary assumption of marital solidarity enhancement. Finally, we explore the extent to which implications based on these new ideas are supported by the relevant empirical literature.

As soon as men and women learn the utilitarian lesson and refuse to take for granted the traditional arrangements that their social environment makes for them. . .they cannot fail to become aware of the heavy personal sacrifices that family ties and especially parenthood entail under modern conditions. . .The question that is so clearly in many potential parents' minds: "Why should we stunt our ambitions and impoverish our lives in order to be insulted and looked down upon in our old age?"

—Schumpeter ([1942] 1975:157–58)

Explaining variations in fertility has occasioned a great deal of controversy. The principal contending approaches are based on normative (or cultural) and rational choice (or economic) explanations. Although normative explanations rooted in differences in internal states appear to be more realistic, they are alarmingly post hoc. Standard rational choice explanations built on shifts in opportunity costs are theoretically more elegant, but they do not help to explain why people continue to have children in developed societies, where children's net *instrumental* value is negative.

This paper uses a nonstandard value assumption—uncertainty reduction—to develop a rational choice explanation of contemporary fertility behavior in developed societies, which provides an answer to this question. We focus on one particular behavioral outcome: whether individuals or families who are at risk of having a child in fact do so. By deriving a range of propositions and considering evidence about this one outcome, we seek to account for variations in parenthood. In the discussion that follows, we review the limitations of normative and standard rational choice explanations of shifts in fertility

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behavior. Then we propose two informal models based on an uncertainty-reduction value assumption. Last, we explore the extent to which implications based on these new ideas are supported by the relevant empirical literature.

THE CAUSES OF SHIFTS IN FERTILITY

Every developed society has witnessed a substantial decline in fertility rates from well above replacement levels (3.5 children or more) to well below (two children or fewer) (Davis, Bernstam, and Ricardo-Campbell 1987). The causes of this downward shift in fertility have become the central preoccupation of recent demography. In general, fertility depends on at least four different kinds of determinants.¹

The first are *biological*; these include the male's and the female's age (both lower and upper bounds) and the fecundity of both partners within the reproductive age range. A second category is *control over contraception*, which includes the availability and cost of information and techniques to control reproduction as well as determinants that owe to social factors. Lesthaege (1983), for instance, argues that one of the consequences of the extension of market rationality in western Europe is the treatment of reproductive behavior as subject to rational decision making (also see Westoff 1987). Preston (1987:182) suggests that the availability of contraceptive technology attenuates the efficacy of pronatalist norms because—as a result of this technology—the cost of complying with these norms increases.

Chance is the third type of determinant: children can be an unintended consequence of sexual activity. The combined availability of contraceptive technology and abortion, however, has reduced the number of chance births. Thus, whereas 29% of all pregnancies in the United States were unplanned during 1977–1982, only 7% were unplanned by 1986 (Westoff 1987:165).

Parents' desire for children—the net expected benefit of having one or more children—is the fourth determinant, and the one that has occasioned the greatest debate in the literature (Bloom and Pebley 1982:211): has fertility decreased because of changing norms and preferences, or because of shifts in economic and structural constraints that have increased the opportunity costs of children? Although both sets of elements probably play a role in determining fertility behavior, we must determine their relative weights in order to forecast future trends.

Normative Explanations of Fertility Shifts

Blake (1968), Lesthaege (1983), and Preston (1987) have emphasized the role of norms on fertility behavior. How do norms affect individuals' decisions to have children? Intuitively it is not difficult to understand why membership in pronatalist groups (such as the Mormon or the Catholic Church) could contribute to increased fertility rates; in such cases, compliance with the dominant norm is motivated by the fear of sanctions. Norms, which often arise in opposition to preferences, desires, wishes, and drives (Freud [1930] 1961), allow groups to solve dilemmas of cooperation that flow from the egoistic motivations of their members (Friedman and Weingast 1993).

Some writers have suggested, however, that cultural or ideological *climates* can produce similar effects, presumably in the absence of sanctions. Thus Lesthaege (1983:415) believes that the spread of secular individualism—the “pursuit of personal goals devoid of references to a cohesive and overarching religious or philosophical construct”—has dampened fertility in western Europe. Caldwell (1981) accounts for fertility decline in

Australia in similar terms. Preston (1987) argues that the ideology of zero population growth helps to justify childlessness, while the ideology of “responsible parenthood” obligates parents to invest in higher-quality offspring. Westoff (1978) and Ryder (1979) believe that the decline is due to changes in norms about the family, childbearing, marriage, and especially the status of women in American society, combined with the use of highly effective contraception. Westoff provides evidence that normative changes also have occurred in Europe, especially in Scandinavia. Ryder (1979:361) suggests that “perhaps we must consider the possibility that the norms themselves may be changing—that motherhood is becoming less a matter of obligation and more a matter of preference.”

In addition, the conclusion of the massive World Fertility Study tends to support the normative position: “Taken *en masse*, the results are more consistent with an ideational theory of change based on the spread of new aspirations or new attitudes towards family formation or birth control, than with a structural theory, which emphasized changes in the economic roles of family units or of children” (Cleland 1985:243).² Finally, war and occupation in postwar Japan have been held to affect the demand for children, and hence Japanese fertility behavior (Preston 1987:190).

However suggestive the evidence for normative causation of fertility, such explanations are less than fully satisfactory on five counts. First, norms, preferences, and values seldom are defined clearly in this literature; as a result, terminological confusion reigns. Second, potentially relevant alternative causes (such as the structural constraints emphasized by the rational choice explanations discussed below) often are not controlled. Third, the mechanisms by which ideological changes presumably affect fertility decisions have not been spelled out clearly. Fourth, because normative factors are exogenous in these writings, explanations based on such factors have an unsatisfying post hoc quality. Last, social demographers rarely, if ever, bring an explicit theory of individual action to their studies of reproductive behavior.

Rational Choice Explanations of Fertility Shifts

During the past 20 years, rational choice models have become increasingly prominent in fertility research. These models are built on two quite separate kinds of determinants. *Constraints* refer to conditions external to individuals, which attach distinctive consequences to particular courses of action. *Values* (sometimes termed *utilities*) refer to internal states that enable people to evaluate these consequences as more or less desirable.

To derive behavioral predictions, one must specify both external constraints and values beforehand. In principle this requirement poses no special problems, but not so in practice: it has proved much easier to specify constraints than values.

The problem of value specification. Values are relatively general and durable internal criteria for evaluation (Hechter 1992). As such, they differ from preferences (and attitudes) as well as from norms. Like values, preferences (and attitudes) are internal states; unlike them, preferences are labile rather than durable, and particular rather than general. Whereas norms are also evaluative, general, and durable, they are external to actors and therefore (in contrast to values) require sanctioning for their efficacy. Values exist in two fundamental varieties: *instrumental* values provide means to a wide variety of ends, whereas *immanent* values are ends that are desired purely for their own sake. The principal difficulty in specifying values derives from their unobservability. Whereas constraints—which are external to actors—are observable, values—which are subjective constructs—either must be imputed from observed behavior or must be assumed.

Two different methods have been used to impute values; both are problematic. In one method, survey researchers ask people questions about their own values. The resulting

measures, however, tend to be labile rather than stable and are poor at predicting behavior (Hill 1981; Schuman and Johnson 1976). These difficulties stem from concealment of values for strategic purposes, from the absence of a baseline for comparison between different subjects, and from the lack of cost of misrepresenting one's values (Fischhoff 1993). Sometimes people do not know what their values really are; hence their answers to questions about values may be unreliable on this account as well (Converse 1964).³ Finally, cognitive psychologists have shown that the values revealed by various elicitation procedures are determined largely by these procedures themselves rather than by any stable internal dispositions (Tversky, Sattath, and Slovic 1988).

The second method of value imputation, known as revealed preference theory (Samuelson 1947; von Neumann and Morgenstern 1944), relies on observing people's actual choices between alternative goods, net of constraints. The choice of A over B is said to reveal the preference for A over B. If values are stable, the subject will express the same preference in the future, given the same set of choices. Although revealed preference appears to eliminate biases resulting from the interview situation, as well as those due to subjects' ambiguity about their own values, it too entails difficulties. First, if choice occurs in a setting in which one has any motive to conceal one's true values, then some unknown part of the observed choice may be due to strategic considerations rather than to values, and the equation of choice with values will mislead. Second, people's values may have changed since the last observation was made; thus any simple behavioral projection from past to future choices would be erroneous (Alwin 1973). Because rational choice theory conceives of behavior as the product of the interaction of constraints with values, we are not warranted in assuming a one-to-one correspondence between behavior and values.

In light of these fundamental measurement problems (Hechter, Nadel, and Michod 1993), rational choice theorists usually specify values by assumption rather than by imputation (H. Simon 1986; Stigler and Becker 1977). To generate propositions about social outcomes, they assume values to be homogeneous and temporally stable across individuals. If these assumptions are relaxed in the absence of independent measures of values, it becomes difficult to predict determinate social outcomes because when individuals with heterogeneous values face identical constraints, the theory predicts that their behavior will diverge.⁴ Rational choice theorists know that people's values often vary, but this realization by itself does not necessarily challenge their research strategy. Indeterminacy due to the heterogeneity of values can be overcome with the aid of a pair of quite reasonable auxiliary assumptions: 1) although people have many different, idiosyncratic values, they hold certain values in common. 2) If the idiosyncratic values are distributed randomly and independently with respect to constraints, then social outcomes will be determined solely by the common values (Hechter 1987:32).

Hence the specification of the common value(s) is a critical step in any empirical application of rational choice theory. On what basis, however, can common values be assumed to exist in any population? Common values may be assumed if they are instrumental because in such a case their attainment makes it possible to satisfy other, idiosyncratically distributed values (see Hechter 1994). This point explains why wealth (the present value of a stream of money receipts, minus expenses) appears so frequently in empirical applications of rational choice theory. On the one hand, wealth is measured easily. On the other, it is highly fungible; thus everyone will prefer more wealth to less, regardless of their idiosyncratic values, because wealth can be converted in the marketplace into any number of the immanent values that individuals might happen to hold.⁵ An increment in wealth enables the egoist to buy more (or higher-quality) consumer goods; simultaneously it enables the altruist to make greater charitable donations. Therefore the greater wealth leaves both better off than they were before. If instrumental values are the only common ones, then rational choice theorists can safely ignore the messiness of subjectivity in social life. Two

different kinds of models based on instrumental values have been used to explain fertility variations: the Chicago-Columbia approach, which treats these values as exogenous, and the Pennsylvania approach, which allows them to vary across individuals by making them endogenous.

The Chicago-Columbia approach. The most influential rational choice explanation for the effects of changes in social and economic structures on fertility behavior—which has come to be known as the Chicago-Columbia approach—derives from Becker (1960), who regards children as analogous to consumer durables. Becker reasoned that under modern conditions, the net costs of having a child are positive. Hence people would have a child only if doing so led to a nonspecific immanent good—one that is valued for its own sake. The assumption of common value in this model is muddy: because, under modern conditions, wealth maximizers would have no children, those who choose to have children must be operating on the basis of some other value(s), whose nature is not specified.

If children are immanent goods whose desirability is subject to a budget constraint, then the number of children that parents would demand should be a function of parents' income: the higher their income (all else being equal), the greater the number of children they should desire. Yet even at the time when Becker first wrote, the bulk of the evidence suggested that family size was associated negatively with income in developed societies.⁶ How was this to be explained? Initially Becker suggested that a critical intervening variable—access to contraceptive technology—was correlated positively with income and thereby obscured the true causal relationship between income and family size. Subsequent studies revealed the inadequacy of this defense (also see Blake's 1968 critique), and Becker (1981, ch. 5) later modified his argument.

Becker's revised argument weakens the analogy between children and consumer durables in an interesting way. Children remain consumer durables providing nonspecific immanent goods, but, unlike refrigerators or automobiles, children are time-intensive.⁷ In view of this point, the opportunity costs of having children are affected crucially by shifts in the value of parents' time. The value of time would appear to be measured rather easily: it increases as the wage rate shifts upward. Once this change is made, the empirical implications of Becker's approach can be derived easily. If children are more time-intensive than the average consumption commodity, and if the real value of human time increases, then the price of children will increase in relation to other goods. Some of these other, cheaper goods will substitute partially for children in the parents' budget constraint, which now is defined to include *both* time and goods (Schultz 1987:87). Further, if child care is more intensive in the mother's time than in the father's, and if the value of women's time increases in relation to the value of men's time, then children will be more expensive and fewer children will be sought.

The Pennsylvania approach. Easterlin, Pollak, and Wachter (1980:85) criticize the utility of the Chicago-Columbia model in the developed world precisely on account of its treatment of values (or what they term "preference variables"). Their alternative model (also see Easterlin 1966)—called by Sanderson (1980) the Pennsylvania-school model—postulates that consumption experiences in childhood and adolescence determine an individual's consumption standards, and thus the values that help govern fertility decisions (together with constraints). Values no longer are exogenous in the Pennsylvania model. Therefore the principal modification introduced by the Pennsylvanians concerns the endogeneity rather than the instrumentality of the relevant values.

Using these premises, Easterlin (1980) and Butz and Ward (1979) argue that norms have remained unchanged, but that structural changes in the economy have altered the opportunity cost of having a child. The availability of consumer goods is likely to reduce the relative value of children, as well: children are goods that are incompatible with the

lifestyles of educated urbanites. Further, as the demand for skills increases in the labor market, the cost of educating children rises (Westoff 1987).

Although endogeneity allows for greater heterogeneity in values over several generations, the two kinds of models are similar in the context of a single generation (Sanderson 1980:141). This similarity has an important reason: both the Chicago-Columbia and the Pennsylvania model are concerned solely with instrumental values.

Models based on instrumental values are effective in explaining the decline of fertility in developed societies, but they cannot explain why anyone under current circumstances would choose to have a child, absent significant state-provided pronatalist incentives. Fertility rates recently have declined by as much as 50%, but in no society are they approaching zero. Instead the two-child family has become the new equilibrium. As Keyfitz notes, "What will require [additional explanation] is the present prevalence of the two-child family. Instead of family size declining steadily and uniformly toward zero. . . it tends to move toward two, and the special position of the two-child family still needs explanation" (1987:152). Thus the interesting question for instrumental models of fertility is *why do people in developed countries have any children at all when the prevailing constraints are inconsistent with this choice?* The obvious answer is that they have children because the value, to them, of having children outweighs the value of the instrumental (time and money) resources that they give up in doing so.

This answer, however, begs the question of what it is about children that makes them so valuable. By focusing entirely on instrumental values, rational choice theories of fertility provide no insight into this question. Unless the nature of the immanent value provided by children is prespecified, it is impossible to understand why anyone would have children today, save as the by-products of miscalculation.

Although some behavior can be explained by instrumental values alone, a large body of behavior does not seem to be explicable in these terms. Even some economists are becoming convinced that ignoring immanent values is at least partly responsible for the failure of many empirical models (Akerlof and Yellen 1993; Brenner 1983; Frank 1985; Ochs and Roth 1989). Becker (1981; Becker and Barro 1987) himself constructed models of family interaction on the basis of an altruistic value assumption. Also, in his most recent work, Becker (1992) argues for a wholesale reconsideration of the value assumptions of rational choice theory.

In this paper we aim to supplement rational choice theories of fertility by proposing a noninstrumental motive for the decision to have children. We are not the first to do so. Psychologists have proposed long lists of the immanent values that children might satisfy, together with corollary variables that distinguish between individuals in different sociodemographic categories. One such list, buttressed by survey evidence, includes *expansion of the self*—in response to the evanescent quality of life, many people feel the need to anchor themselves beyond their own lifetime (Hoffman and Hoffman 1973); *primary group ties and affiliation*—children have value as a bulwark against the impersonalization of modern society (Hoffman and Hoffman 1973); *stimulation, novelty, fun*—children introduce an element of unpredictability and excitement into life (Hoffman and Hoffman 1973; also see Ainslie 1992 on how "surprise" is an important element in utility); *creativity, accomplishment, competence*—needs for creative expression emerge when society advances beyond the subsistence level and when large numbers of people are assured the basic necessities of life, and rearing children provides an outlet for such needs (Hoffman and Hoffman 1973); *power over others*—children afford unique opportunities to guide, teach, control, and generally exert influence over another human being; and, finally, parents may value children for their *vicarious achievement possibilities* (Hoffman and Hoffman 1973).⁸

Lists of this sort, however, are of dubious value. In the first place, imputing values

from survey responses is a treacherous business (see the admission by Hoffman and Hoffman 1973:33–35). In addition, such lists provide no mechanism that explains how individuals resolve conflicts between multiple values in choosing their behavior (Lea, Tarcy, and Webley 1987:494). Because it is virtually impossible to spell out the implications of a multidimensional value scheme for social outcomes such as fertility rates, such an approach is necessarily post hoc. For this reason it is not surprising that tests of hypotheses based on this approach have yielded equivocal results (Hoffman and Manis 1979; Hoffman, Thornton, and Manis 1978).

In contrast, we propose to build on current rational choice models of fertility by specifying a new assumption of common immanent values to supplement the more familiar instrumental values. We use this assumption—uncertainty reduction—to explain why some people in advanced societies have no children, while others have at least one child.

AN UNCERTAINTY REDUCTION THEORY OF PARENTHOOD

We propose a two-stage theory of the value of children that rests on the fundamental assumption of uncertainty reduction and on a subsidiary assumption of enhancement of marital solidarity. The uncertainty reduction assumption asserts that rational actors will always seek to reduce uncertainty. The marital solidarity enhancement assumption asserts that husbands and wives will seek to increase solidarity in their marriages. Because marriage itself is a familiar means of uncertainty reduction, the marital solidarity enhancement assumption is logically subordinate to the first assumption. With these two assumptions in place, we generate a number of empirical propositions about the likelihood of parenthood or childlessness. We contend that the theory based on these two assumptions explains a wide *variety* of the empirical findings in these literatures and therefore is superior to perspectives with a more limited scope of explanation. This theory seeks to explain the aggregate fertility outcomes of those who control the childbearing decision. Therefore propositions can be derived for women acting alone (as in the uncertainty reduction hypotheses below), for couples making joint decisions (as in the marital solidarity hypotheses below), or for men who control fertility decisions (as may occur in some African societies, but these are not discussed here).

Constraints have exactly the same status in our theory as in other rational choice explanations of fertility behavior. We are specifying the value that people maximize in their fertility decisions. When people are viewed as having children in order to maximize their utility, this formulation does not allow us to predict who will choose to have children because we do not have valid and reliable independent measures of individual utilities. We can and do make such predictions, however, by specifying uncertainty reduction as the utility that is being maximized.

We contend that uncertainty reduction is a universal immanent value. Yet our argument about the value of children for uncertainty reduction applies only to developed societies, where children represent a net economic cost to their parents. We would expect this argument to hold in less developed societies as well, where children may not represent such a cost. Cain (1978; Cain, Khanam, and Nahar 1979) finds that households and women who face the prospect of sudden divorce or widowhood without any economic security produce children to reduce uncertainty. The implication of this finding for women's fertility behavior in the rural Bangladesh village that Cain studies is that it is desirable to produce as many sons as possible (Cain et al. 1979:433). It is difficult, however, to disentangle the uncertainty reduction motivation from the economic motivation because children also increase a household's production capacity (Cain 1978:426). Because the same (unconstrained)

fertility behavior leads both to maximization of wealth and to uncertainty reduction, it is more difficult to study the value of children in less developed societies.

The Uncertainty Reduction Assumption

Decision making under uncertainty is decision making without knowing the odds of the various alternative consequences in the set of choices. This is to be distinguished from decision making under risk, in which a decision maker can attach probabilities to alternative consequences. Failure to achieve desired ends can occur in both states. Under risk, however, the decision maker knows (or believes she knows) the odds of failure, whereas under uncertainty, the decision maker cannot judge these odds (Orbell 1993). In choosing between alternative courses of action, then, the rational actor first must ascertain all potential consequences of a single course of action; second, must assess the desirability of these consequences; and third, must assign a subjective probability to each of these consequences. The judgment is under risk whenever any of these probabilities lies between 0 and 1. Given such conditions, the rational actor will choose that course of action with which the highest expected value is associated. Under uncertainty, however, such rational calculation is precluded because the third step in the process—assigning probabilities to the potential consequences—is impossible. Therefore, under uncertainty, people cannot use a utilitarian calculus to guide their behavior.

To proceed rationally, one must be able to assess risk. For this reason, rational actors prefer risky to uncertain situations (Ellsberg 1961). States of the world can be uncertain as well, and beyond the actor's ability to change. Indeed, one may argue, as did Knight ([1921] 1971:313), "We live in a world full of contradiction and paradox, a fact of which perhaps the most fundamental illustration is this: that the existence of a problem of knowledge depends on the future being different than the past, while the possibility of the solution of the problem depends on the future being like the past." Yet even this extreme state of objective uncertainty does not stand in the way of the actor's quest to reduce uncertainty in his or her life. Insofar as actors have it in their power to change an uncertain state to a certain (albeit risky) state, they will do so. This is the uncertainty reduction assumption.⁹ Because people value uncertainty reduction as an end in itself rather than merely as a means to various other ends, it is an immanent rather than an instrumental value.

Nevertheless, uncertainty reduction shares several advantages with instrumental values such as wealth. Every rational actor prefers the absence of uncertainty because everyone prefers to be able to assess the consequences of his or her action.¹⁰ Indeed, uncertainty precludes all instrumental action; therefore the reduction in uncertainty temporally precedes the possibility of such action. Further, although uncertainty is not measured easily, we demonstrate below that its implications for fertility are amenable to measurement.

Actors can reduce uncertainty in two ways. First, they can try to gather information that transforms uncertainty to risk for a local choice problem (Stinchcombe 1990). Second, they can pursue global strategies designed to reduce uncertainty regarding whole strings of future courses of action. Although no actor can make the future more certain by his or her actions alone, the desire to reduce uncertainty impels actors to bind themselves to courses of action that are largely independent of future states of the world.

Few such global strategies exist, however, and the degree to which any of them are available varies considerably across social strata. The principal global strategies available to ordinary individuals in the United States in the 1990s are stable careers, marriage, and children. These commitments reduce uncertainty by embedding actors in recurrent social relations. Parenthood is irreversible. It is also irrevocable: "The decision to have a child is

one of the few resource allocation decisions that the couple makes that implies an essentially irrevocable commitment to a stream of expenditures over a long period of time. There is an essential difference between children and consumer durables, since, once the child arrives, there is no recourse to a resale market nor to a local humane society" (Turchi 1975:44). These features enhance the uncertainty-reducing character of the decision to have a child.

We argue that *the impetus for parenthood is greatest among those whose alternative pathways for reducing uncertainty are limited or blocked*. We claim, for instance, that the impetus to have children among poor African-American or other minority young women derives largely from their inability to use stable careers or marriage as uncertainty-reducing strategies. Having a child changes life from uncertain to relatively certain: "The girl who has an illegitimate child at the age of 16 suddenly has 90 percent of her life's script written for her. She will probably drop out of school; even if someone else in her family helps to take care of the baby, she will probably not be able to find a steady job that pays enough to provide for herself and her child; she may feel impelled to marry someone she might not otherwise have chosen. Her life choices are few, and most of them are bad" (Campbell 1968:238).

This is a telling scenario because it emphasizes that uncertainty reduction in and of itself need not produce happy outcomes, or even outcomes preferable to those which might have obtained if the actor had been willing to bear uncertainty for a longer period. The young woman in Campbell's passage might have had a better life if she had finished high school, obtained a steady job, and so on. Indeed, she might have been better off (in terms of her life's accumulation of income, for instance) if she had never had a child at all. We do not claim that uncertainty reduction leads to a better set of instrumental outcomes. We argue that the motivation for uncertainty reduction is abiding, and that (other things being equal) less uncertain states are preferred to more uncertain states, even if they appear to lead to a preponderance of "bads" rather than "goods."¹¹ This point is especially important because the uncertainty reduction mechanism that concerns us most strongly here is that of becoming a parent.

Yet one might ask whether uncertainty also results from parenthood. Children might reduce some types of uncertainty, but don't they create others? Will the child be born healthy or with birth defects? Will it grow up to be a good child or delinquent? Will it succeed or fail in school? Will it experience major illnesses? Why would an actor interested in reducing uncertainty willingly introduce new sources of uncertainty?

A well-established cognitive bias plays a role here. Decision theorists and cognitive psychologists have discovered that people's perceptions of risk are biased, but in predictable directions. Actors downplay risks and other hazards that they experience voluntarily and/or can take steps to control, whereas those which they experience involuntarily and/or cannot control loom larger in their perception (Slovic 1987; also see Goszczynska, Tyszka, and Slovic 1991; MacGregor and Slovic 1989; Teigen, Brun, and Slovic 1988). Because most women and most couples choose to become parents voluntarily, and because parents can do so much to control their children's fate, risks and uncertainties emanating from parenthood are likely to be diminished in comparison with the types of uncertainty that individuals seek to reduce through parenthood, such as vicissitudes in labor market conditions and externalities resulting from the behavior of other individuals such as spouses or family members.

The Assumption of Marital Solidarity Enhancement

Marriage is another global strategy for reducing uncertainty; yet the instability of marriages is yet another source of uncertainty. Thus we introduce a subsequent assumption:

joint decisions favoring parenthood are more likely to be made by married couples who have fewer alternative sources of enhancing the solidarity of their marriages.¹²

Marital solidarity, like other sorts of group solidarity, is maximized by the members' dependence on the group (Hechter 1987). For some couples, parenthood enhances the dependence of each member of a marriage, and thereby the overall solidarity of the marriage.¹³ A solidary marriage is a means of uncertainty reduction. Therefore endogenous mechanisms that contribute to the dependence of the members of the marriage, thus reducing uncertainty, constitute the second-stage predictions of our theory.

THE VALUE OF CHILDREN

The value of children derives from their capacity to reduce uncertainty for individual women and to enhance marital solidarity for couples. From this perspective, it is the mere presence of a child that counts. As a result, the transition from childlessness to parenthood is of primary interest to us; we seek to explain why people move from the state of having no children to the state of having one child.

Hypotheses Derived from Assumptions of Uncertainty Reduction and Marital Solidarity

The following hypotheses are derived from the uncertainty reduction and the marital solidarity assumptions discussed above. Some of these hypotheses are not unique in and of themselves; they might well be derived from other perspectives. Others predict phenomena and relationships not yet empirically observed. The *set* of hypotheses is unique, however; from no other (equally parsimonious) perspective can this diverse, empirically wide-ranging set of hypotheses be derived.

Although the following is a list of hypotheses, it is an unfinished list. Also, although it is a list, it differs in a fundamental way from the laundry lists of immanent values criticized above (such as in Hoffman and Hoffman 1973). Each desire in Hoffman and Hoffman's list of the rewards of having children relies on a different value assumption, but all of the following hypotheses derive from a single value assumption, namely uncertainty reduction, which motivates the seemingly quite disparate set of implications.

Uncertainty reduction. The capacity of individuals to reduce uncertainty varies as does the extent of objective uncertainty they face. Insofar as these elements vary by social position, we can make predictions about the value of children in reducing uncertainty for various subgroups. In general we predict that two categories of individuals are more likely than others to seek parenthood: those who, for a variety of reasons, face greater uncertainty, and those who have less access to other means of uncertainty reduction. The first and the fourth hypotheses in the following list involve the first category of individuals; the rest concern the second category.

U-1: *The objective risk of divorce has a positive effect on the propensity to parenthood.*

Divorce ushers in the unknown: uncertainty about many of life's fundamentals, as well as about future marital and family status. Therefore those who face a greater objective risk of divorce have a greater need to reduce uncertainty and are more likely to seek parenthood as one means to achieve this goal.

Further, the past empirical literature shows that three distinct types of marriages, among others, have higher rates of divorce: those among persons who are exogamous on

such status characteristics as religion, education, race, and social class (Goode 1956, 1976; Lehrer and Chiswick 1993), those among persons in lower social classes, and those among persons who marry at younger ages. We expect heterogamy to increase the propensity to parenthood because of its negative effects on marital solidarity.¹⁴ Thus we can formulate the following three subhypotheses:

U-1.1: *Exogamy and heterogamy have a positive effect on the propensity to parenthood.*

U-1.2: *Social class has a negative effect on the propensity to parenthood.*

U-1.3: *Age at marriage has a negative effect on the propensity to parenthood.*

U-2: *Prospects for marriage have a negative effect on the propensity to parenthood.*

As discussed earlier, stable marriage is an effective means of reducing uncertainty. Thus persons in subgroups with the poorest prospects of marriage are most likely to seek parenthood outside marriage. This logic leads us to predict that two very different subgroups of women are more likely than others (who have better chances of marriage) to value children as a means of reducing uncertainty: poor African-American teen women and successful career women over age 30. Note that our theory offers an alternative and very different motivation for poor African-American teen women who have children out of wedlock: in our view, the teens' higher rate of childbearing derives from the absence of other paths—marriage and stable careers—to reduce uncertainty.¹⁵

U-3: *Prospects for stable and successful careers have a negative effect on the propensity to parenthood.*

Stable employment and a career provide another effective means to reduce uncertainty. Therefore those in subgroups with the poorest prospects of successful careers are most likely to seek parenthood (Geronimus 1987). U-2 and U-3 combined lead us to predict that of the two categories of women mentioned above (poor African-American teen women and successful career women over age 30), the former are more likely to seek parenthood than the latter, although both are more likely to become parents than the general population of women (who have good prospects for both stable marriages and careers). This is the case because poor African-American women lack *two* alternative means of uncertainty reduction, whereas successful career women over 30 lack only *one*.

U-4: *Within the upper class, the upper upper class (the "old rich") have a higher propensity to parenthood than the lower upper class ("the nouveau riche").*

All wealthy persons must preserve their status in order to avoid uncertainty. How the status is to be preserved, however, differs according to how it was acquired in the first place. The nouveau riche, who attained their status by their own efforts, must spend money in order to gain cachet. The old rich, who inherited their status, must create dynasties in order to protect their position. Both the old rich and the nouveau riche face greater uncertainty because of their unique need to preserve their high status. The former must rely on parenthood to achieve this goal, whereas the latter have an alternative means.

U-5: *Financial and emotional support from families of origin has a negative effect on the propensity to parenthood.*

Life is full of uncertainty; unexpected life crises may befall anyone at any time. People whose families of origin can provide reliable financial and emotional support, however, can rely on kin in times of trouble. Those who have no such safety net must resort to parenthood to reduce the same uncertainty. This hypothesis cuts across standard social groupings;

measures of subjective perception of the financial and emotional support offered by families of origin are more important here than objective measures.

Enhancement of marital solidarity. As noted above (in connection with U-1 and U-2), marriage is a global strategy for reducing uncertainty. Thus people with solidary marriages are less likely to choose parenthood as a means of reducing uncertainty than those with less solidary marriages. Insofar as the solidarity of marriage correlates with other factors, we can predict a married couple's propensity to parenthood from these external factors.

S-1: The multistranded quality of the relationship between husbands and wives has a negative effect on the propensity to parenthood.

Marital solidarity is a function of each member's dependence on the marriage (Hechter 1987). The multistrandedness of the relationship—financial ties, occupational ties, and ties of common interest—increases the husband's and the wife's dependence on their marriage through two separate mechanisms. First, the multistranded quality of the relationship is a measure of compatibility between the partners. The more compatible the spouses, the less likely it is that either would be able to find someone else who is equally or more compatible, if the marriage were to end in divorce. Second, the more multistranded the relationship, the more involved the spouses are with each other and thus the more difficult they would find it to extricate themselves from the relationship in case of divorce. Through both mechanisms, the multistrandedness of the relationship increases the dependence, which in turn increases marital solidarity, which then decreases the couple's propensity to seek parenthood as an alternative means of reducing uncertainty.

S-2: Duration of marriage has a positive effect on the propensity to parenthood.

The passion of the early years of marriage—a strong but often ephemeral source of solidarity—gives way over time. The duration of marriage thus has a negative effect on marital satisfaction and solidarity; this effect, in turn, has a positive effect on the propensity to seek parenthood. Our argument here does not rely on the exposure to risk of parenthood, which also increases with duration of marriage. We predict that when one controls for marital satisfaction and solidarity—the key intervening variable—the duration of marriage has no independent effect on the likelihood of first birth. Some empirical studies, reviewed below, strongly support our alternative contention.

S-3: The extent of marital support has a negative effect on the propensity to parenthood.

Marriages do not exist in social isolation. In some social, occupational, and religious groups (those whose members are predominantly married), promarital norms and support for marriages are stronger than in others; these serve as an exogenous source of encouragement for marital solidarity. The existence of these external supports mitigates the need for extensive endogenous mechanisms to produce solidarity.¹⁶ In the absence of such mechanisms, in groups containing less social and normative support for marriage, the solidarity of the marriage must be bolstered from within. Thus the extent of support for marriage (the closeness or connection to promarital social groups) has a negative effect on the propensity to seek parenthood as an endogenous mechanism to produce marital solidarity.

S-4: Social and geographical mobility has a negative effect on the propensity to parenthood.

Considerable evidence shows that extreme social and/or geographical mobility tends to sever individuals' earlier social ties to friends and families (Curtis 1959; Heath 1981;

Lemasters 1954; Lipset and Bendix 1959:65). The relative absence of ties to families and old friends correspondingly increases the spouses' dependence on marriage as the sole source of social support. Therefore those who are socially and geographically mobile are more dependent on their spouses for a host of emotional, social, and psychic needs than those who are less mobile. This dependence increases the solidarity of extremely mobile marriages, and consequently decreases their propensity to parenthood. This prediction is at least partially consistent with an earlier empirical finding that greater geographical mobility is associated with lower fertility (Freshnock and Cutright 1978).

S-5: Power imbalance between husbands and wives has a positive effect on the propensity to parenthood.

Imbalance of power and other resources within the marital relationship is another threat to solidarity. One common source of such imbalance arises when only one of the partners has a highly successful career. In such cases we would expect a higher likelihood of parenthood for two reasons. First, the more successful the one partner's career, the less that individual's dependence on the marriage. Because marital solidarity is a function of the partners' dependence, marriages characterized by low dependence need other mechanisms to increase their solidarity. Second, the two partners' differential dependence will induce the desire in the more dependent (and thus less powerful) partner to equalize the dependence (Emerson 1962), and to seek parenthood to do so. Through both mechanisms, the power imbalance between the spouses decreases marital solidarity, and thus increases their propensity to seek parenthood as a means to increase solidarity.

ASSESSING THE THEORY

How is this theory to be evaluated? One way is by assessing its theoretical fruitfulness (Jasso 1988, 1989). Every theory consists of two parts: postulates (or assumptions) and predictions (or hypotheses). A theory is fruitful insofar as it minimizes the number of assumptions from which hypotheses are derived, maximizes the number and variety of hypotheses derived from these assumptions, and generates hypotheses about phenomena and relationships that have not yet been observed. On the basis of these three criteria, our uncertainty reduction theory of parenthood must be judged relatively successful. First, it rests on only two basic assumptions (one main and one subordinate). Second, from these two assumptions, 10 main (and three subordinate) hypotheses have been derived, implicating fertility with a wide variety of factors including religious exogamy, career opportunities for women, nouveau riche class location, multistrandedness of marital relationships, promarital social groups, geographic mobility, and dyadic power imbalance. Even this particular set of derivations is incomplete. Third, the current set of 10 hypotheses contains several (such as U-1, U-4, S-1, S-3, S-4, and S-5) that predict relationships which so far have not been observed systematically and extensively.¹⁷

Although our theory scores high on all three of these criteria, like any other theory it is subject to challenge. At the theoretical level, a superior alternative will consist of an internally logically consistent theory of parenthood which has fewer behavioral assumptions (that is, only one assumption), offers more than 10 main implications (all derived from this single assumption) about a wider range of observations than our set of 10 hypotheses, and produces more hypotheses predicting phenomena and relationships not yet observed. We submit that no other existing theory of parenthood scores higher on all three criteria, or even comes close. For example, Hoffman and Hoffman's (1973) theory of the value of children to parents produces a larger list of hypotheses than we have presented in this article. Each

derives from a separate value assumption, however, and thereby scores very low on Jasso's first criterion.

The ultimate test of a theory is empirical, and the task of designing and conducting a rigorous empirical test of our theory lies beyond the scope of this paper. Before contemplating such a test, we take the preliminary step of asking what level of support for our hypotheses, if any, exists in the current literature.

The Value of Children: Available Empirical Evidence

The value of children can be captured in many ways. The decision to have a child is one way, but even this can be estimated with a variety of measures: time to first birth, fertility, and probability of childlessness are all found commonly in the empirical literature. Because our theory is new and untried, we have decided on an inclusionary rather than an exclusionary decision rule: any study with reasonably strong data analysis that *might* support or contradict our hypotheses has been considered. Although the direction of causality may be difficult to assess empirically, it is specified unambiguously in the theory. (The pertinent findings are listed in Table 1.)

Our interpretation of the findings may or may not be consistent with those of the authors. In particular, the results we cite might be consistent with an explanation focusing on the varying alternative costs of children to women. Certainly women incur different opportunity costs for parenthood, depending on their position in the social structure. Yet this kind of explanation does not address the conundrum lying at the heart of this paper: individuals and couples still have children, even when the economic costs of doing so clearly outweigh the benefits. A theory based solely on (economic) opportunity costs would always predict that under modern conditions, individuals would never have children. In contrast, under the same modern conditions, uncertainty reduction offers a reason to have children.

We report the findings as the authors represent them. Hence, if fertility is the dependent variable in the cited study, it appears as such in the discussion below. Often the variables in these studies are not the ones we would have chosen, were we designing a critical empirical test for our theory. These warnings aside, the mass of evidence suggests the worth of pursuing rigorous empirical tests of the theory.

Evidence pertaining to the uncertainty reduction hypotheses. A recent paper by Lillard and Waite (1993) seems to contradict our first uncertainty reduction hypothesis (U-1), namely that the risk of divorce increases the propensity to parenthood (see Table 1). These authors find that the hazard of marital disruption has a strong negative effect on the likelihood of marital childbearing. Their analysis, however, shows that this effect is stronger for mothers than for childless wives; higher-parity childbirths are more sensitive to the hazard of marital disruption than is the transition to parenthood, which is the focus of our theory.

Support for the hypothesis for the negative relationship between social class and parenthood (U-1.2) is found in studies of American married white (Boyd 1989b) and African-American (Tolnay 1980) women, Canadian women (Wolowyna 1977), and Japanese married women (Hodge and Ogawa 1991). When the dependent variable is measured as childlessness, family income has a positive effect (Boyd 1989b; Wolowyna 1977). When this variable is measured as the number of children ever born, occupational status (Tolnay 1980) and husbands' and wives' education (Hodge and Ogawa 1991) are shown to have a negative effect. In addition, Hodge and Ogawa (1991) have found that the sum of husband's and wife's education has a significant positive effect on the first birth interval.

Table 1. Evidence Supporting and Contrary to the Proposed Hypotheses

U-1: Risk of divorce increases parenthood. <i>Supportive</i>	<i>Contrary</i> Lillard and Waite 1993
U-1.2: Social class decreases parenthood. <i>Supportive</i> Boyd 1989b; Hodge and Ogawa 1991; Tolnay 1980; Wolowyna 1977	<i>Contrary</i> Ritchey and Stokes 1974
U-1.3: Age at marriage decreases parenthood. <i>Supportive</i> Bumpass and Mburugu 1977; Hodge and Ogawa 1991; Kenkel 1985; Kiernan 1989; Mattessich 1979; Morgan 1991; Mosher and Bachrach 1982; Tolnay and Guest 1982; Veevers 1980	<i>Contrary</i> Martín 1992
U-2: Prospect for marriage decreases parenthood. <i>Supportive</i> South and Lloyd 1992	<i>Contrary</i> Rindfuss and Bumpass 1977; Rindfuss and Parnell 1989
U-3: Prospect for a good career decreases parenthood. <i>Supportive</i> Bloom and Pebley 1982; Bloom and Trussell 1984; Brewster, 1994; Brewster, Billy, and Grady 1993; Callan 1982; Gerson 1985; Jacobson and Heaton 1991; Jessor and Jessor 1977; Kiernan 1989; Mattessich 1979 Maxwell 1991; Poston and Kramer 1986; Ramu 1984; Ramu and Tavuchis 1986; Rindfuss, Bumpass, and St. John 1980; Rindfuss, Morgan, and Swicegood 1984; Rindfuss and St. John 1980; Ritchey and Stokes 1974; Veevers 1980; Yogeve and Vierra 1983	<i>Contrary</i> Modell, Furstenberg, and Strong 1978; Rindfuss, Morgan, and Swicegood 1988

(continued)

Table 1. (continued)

U-5: Family support decreases parenthood.	
<i>Supportive</i>	<i>Contrary</i>
Blossfeld and Jaenichen 1992; Callan 1982; Goldscheider and Waite 1991; Kiernan 1992; McLaughlin and Micklin 1983; Ramu and Tavuchis 1986; Rindfuss, Morgan, and Swicegood 1984; Veevers 1980	Goldscheider and Waite 1991; Kenkel 1985
S-1: Multistrandedness of marriage decreases parenthood.	
<i>Supportive</i>	<i>Contrary</i>
Burman and de Anda 1986; Feldman 1981; Houseknecht 1979 Ramu 1984; Somers 1993	
S-2: Marital duration increases parenthood.	
<i>Supportive</i>	<i>Contrary</i>
Geiss, McSeveney, and Floyd 1983; Hodge and Ogawa 1991; Renne 1976; Tomes 1985	Miller 1992; Morgan 1991
S-4: Mobility decreases parenthood.	
<i>Supportive</i>	<i>Contrary</i>
Freshnock and Cutright 1978; Rindfuss, Morgan, and Swicegood 1988	
S-5: Power imbalance increases parenthood.	
<i>Supportive</i>	<i>Contrary</i>
Mosher and Bachrach 1982; Rindfuss, Morgan, and Swicegood 1988; Walter 1986	

Contrary to this hypothesis is the curvilinear relationship between social class and childlessness observed by Ritchey and Stokes (1974) in their study of white wives age 15–39 in the United States. Because this relationship has not been replicated by subsequent studies (such as Boyd's 1989a sample of white wives taken from the 1970 U.S. Census), even in a similar sample, the bulk of the evidence seems to favor the hypothesis as we have stated it.

In analyses of the relationship between age at marriage and parenthood (U-1.3), the studies speak unanimously about the relationship between age at marriage and childlessness, the favored measure of the dependent variable in this set of findings. Among American, British, and Japanese married women, the relationship of age at marriage and childlessness is positive (Bumpass and Mburugu 1977; Hodge and Ogawa 1991; Kiernan 1989; Mattessich 1979; Mosher and Bachrach 1982; Veevers 1980). This relationship holds, net of fecundity and length of marriage (Kiernan 1989), when the comparison group includes only those with small families (Mosher and Bachrach 1982) and when childless husbands and wives are compared with parents (Veevers 1980). The relationship also is demonstrated historically (Morgan 1991) and in historically and geographically diverse populations

(Tolnay and Guest 1982). Further, it holds when intention is substituted for behavior (Kenkel 1985).

Martín (1992), however, suggests that among Spanish women age 18–49, the negative relationship between age at marriage and parenthood may be an artifact of the nonlegitimacy of premarital conception. This study does more than challenge the hypothesis; it suggests the importance of controlling for premarital conception, particularly where there are strong norms for legitimate birth.

Our hypothesis that the prospects for marriage are related negatively to parenthood (U-2) finds limited support and considerable opposing evidence. Though the availability of marriageable males in an MSA has the expected effect on the nonmarital fertility ratios among both white and African-American women (South and Lloyd 1992), Rindfuss and Parnell (1989) find that poorly educated never-married African-American women are no more and no less likely to conceive in the next 12 months than currently married high school graduates, and that highly educated never-married white women are significantly less likely to conceive. In addition, if women who are younger at the time of divorce have better chances of remarriage than older women, the finding that age at marital disruption is related negatively to the probability of intermarital fertility (Rindfuss and Bumpass 1976) can be taken as further evidence against the hypothesis.

This set of findings certainly calls for reexamination of Hypothesis U-2. It may be that prospects for marriage are easily overestimated, or that such prospects are simply too intangible a correlate for behavior as tangible as parenthood.

Whereas marriage prospects are difficult to assess, career and employment opportunities as an alternative uncertainty reduction strategy to parenthood (U-3) are rather straightforward. As predicted, women's education has a positive effect on childlessness (Bloom and Trussell 1984; Jacobson and Heaton 1991; Kiernan 1989; Mattessich 1979; Poston and Kramer 1986; Veevers 1980), as well as on age at first birth (Rindfuss, Bumpass, and St. John 1980; Rindfuss and St. John 1983).

Brewster (1994) shows that the female unemployment rate in the immediate neighborhood increases the risk of experiencing nonmarital first intercourse for both black and white adolescent women; Brewster, Billy, and Grady (1993) demonstrate that white adolescent women are significantly more likely to use contraception for their first intercourse if they live in neighborhoods with more employment opportunities for women. Some relevant age and schooling qualifications may apply. Richey and Stokes (1974) find that the relationship holds for those below age 30, but not for those above age 30. Rindfuss, Morgan, and Swicegood (1984) find that the opposite relationship holds when they compare those with some high school education and those with less than high school education. At the other end of the educational spectrum, Jacobson and Heaton (1991) note that those with graduate education are more than twice as likely to be childless as those with less than college graduation.

Samples that contain occupational subgroups of women also offer supporting evidence. Faculty women have higher rates of childlessness than the general population of women (Yogev and Vierra 1983). Professional, managerial, clerical, and skilled employment jobs are held by above-average proportions of childless women (Bloom and Pebley 1982), although Jacobson and Heaton (1991) found no significant effect between occupational classification and likelihood of childlessness. Childless wives have more education and higher-status occupations than mothers (Callan 1982; Ramu 1984; Ramu and Tavuchis 1986).

The substitution of subjective for objective measures does not alter the relationship. Maxwell (1991) notes that racial differences in age at first birth stem from racial differences in individual expectations about future market and nonmarket income. Poor school

performance is associated with teenage childbearing (Jessor and Jessor 1977). Job dissatisfaction often leads to parenthood (Gerson 1985).

All of these studies are tests of Hypothesis U-3 at a micro level; this is appropriate because our theory uses individual-level assumptions. It may be important, however, that doubt is cast on the hypothesis at the macro level: favorable economic conditions lead to higher probabilities of first births (Modell, Furstenberg, and Strong 1978; Rindfuss, Morgan, and Swicegood 1988). Insofar as childlessness still varies under any economic conditions, however, our hypothesis stands.

The last uncertainty reduction hypothesis for which we have evidence is the hypothesis linking support by the family of origin with parenthood (U-5). Other than the finding that high school juniors and seniors in six southern states who intend to remain childless want to move farther away from their parents than those who plan to have children (Kenkel 1985), the empirical analyses are highly supportive.

Provided that intactness of families of origin serves as a reasonable proxy for support, the evidence is consistent with our theory: women not in intact families by age 16 (Kiernan 1992) or by age 14 (Rindfuss et al. 1984) are more likely to be mothers by age 20, and are more likely to have a first birth within six months of marriage (Goldscheider and Waite 1991). Measuring in a somewhat different way, Veevers (1980) notes that 93% of childless men and women had lived with both parents at age 16, compared with 80% of the general population. Without reference to age, however, Goldscheider and Waite (1991) find that growing up in nonintact families has a total negative effect on the likelihood of first birth.

If more economically advantaged families are able to offer more support to their grown children than less advantaged families, the evidence also supports the theory. Daughters of skilled white-collar workers and professionals are more likely to delay entry to motherhood than daughters of unskilled workers (Blossfeld and Jaenichen 1992), and daughters of higher-SES parents are more likely to remain childless than those of lower-SES parents (McLaughlin and Micklin 1983).

Finally, if we assume that only children receive more support from their families of origin than do children with siblings, evidence that voluntarily childless wives in Canada (Ramu and Tavuchis 1986) and in Australia (Callan 1982) are much more likely to be only children is also consistent with this hypothesis.

Evidence pertaining to the marital solidarity hypotheses. The evidence available for evaluating our hypotheses concerning enhancement of marital solidarity is more limited. To some extent these hypotheses constitute a bit of folk wisdom, summarized in Tzeng's (1992:616) analysis of the National Longitudinal Survey: "The physical presence of children in the household serves as an obstacle to their parents' marital breakdown." Intensive interview studies (Gerson 1985; Wilk 1986) offer some cautionary evidence, though only for small, nonrepresentative samples. Wilk (1986:48) writes, "One thing was certain—children were out of the question for those who felt that their relationship was shaky." Furthermore, the Locke-Wallace Marital Adjustment Test, administered to 32 childless couples and 20 couples who anticipated having children, suggested that these two groups do not differ significantly in their marital adjustment scores (Hoffman and Levant 1985). In general, childless women are more likely to suffer marital dissolution than those with children (Wineberg 1988), and childless couples have higher odds of marital disruption than couples with one child across all marital durations (Morgan, Lye, and Condran 1988).¹⁸

A small interview and survey study (Feldman 1981) suggests that voluntarily childless couples have more positive marital interactions than couples who are parents, and Ramu (1984) cites evidence that childless wives report higher levels of marital satisfaction than do mothers; these studies offer some support for Hypothesis S-1. Studies using Spanier's

Dyadic Adjustment Scale generally have found that childless couples have higher solidarity than couples with children (Burman and de Anda 1986; Houseknecht 1979; Somers 1993).

The second hypothesis (S-2) has received more extensive empirical evaluation. Childless couples across all marital durations report higher levels of satisfaction (Geiss, McSeveney, and Floyd 1983; Renne 1976). In addition, marital duration has a significant positive effect on first birth interval (Hodge and Ogawa 1991) and a negative effect on childlessness (Tomes 1985).

The mixed results of the limited number of studies available suggest that the measurement of the dependent variable may matter in this case. Marital duration appears to have a negative effect on positive motivation for childbearing (Miller 1992) and a positive effect on continued childlessness, at least in early New England (Morgan 1991). These studies remain suggestive, though hardly conclusive.

Evidence related to Hypothesis S-4 is scanty. Some limited support is provided by the finding that rates of migration among both white and African-American women have a positive effect on childlessness (Freshnock and Cutright 1978), but unfortunately we do not know about their marital status during migration. In another study we learn that people in the military for two years after college graduation are not more likely to become parents than those in the civilian workforce (Rindfuss et al. 1988), but we wonder about the longer-term effects of the mobility associated with career military service.

Limited evidence supports Hypothesis S-5, which links power imbalance in marriage to parenthood in a positive relation. The existence of the power imbalance that derives from income is noted by Mosher and Bachrach's (1982) study, which finds that voluntarily childless wives contribute more to total family income than do mothers of small families. Women who are homemakers are more likely to become mothers (even when they do not intend to do so) than are full-time workers, and they are more likely than their full-time working counterparts to have a first birth within an interval of six to 17 months from a given point in time (Rindfuss et al. 1988). Walter (1986) notes that in general, nonparenthood and later parenthood are associated with more egalitarian relations and reduced role differentiation between spouses. No existing evidence contradicts this hypothesis.

Summary. As indicated by this review of the empirical evidence involving some of the hypotheses suggested by the uncertainty reduction theory of the value of children, further empirical tests of the theory are warranted. We recognize that testing this theory will present a series of challenges. Because we have not yet faced these challenges, we can only suggest what some of the guidelines of such a test might be. 1) Test a *set* of hypotheses derived from this value assumption, not individual hypotheses. For the set of hypotheses described in this paper, the theory is required. For any single hypothesis, however, the general theory is not needed. 2) Focus tests on counterintuitive hypotheses. In particular, the sharpest test of the theory will be for that set of hypotheses for which no alternative value assumption can be plausibly advanced. 3) Aim for longitudinal data. In a stronger test, the explanatory variables are measured before the decision to have a child. 4) Many of the empirical studies discussed here use number of children as the measure of fertility. This measure is not appropriate for our purposes. The best measure for our theory would be the change from childlessness to parenthood.

CONCLUSION

Insofar as action is intentional, all behavior is circumscribed by values. Yet, in view of their unobservability, values always have offered a challenge to research in the social sciences. Survey researchers, who believe that they have a technology adequate to measure individual values, have proceeded inductively and have incorporated their results into

behavioral explanations. In contrast, those who are skeptical about the prospects of measuring internal states have proceeded by assuming the predominance of instrumental values at the expense of immanent values. Although the resulting rational choice explanations can account for the decline of fertility in developed societies, they offer no insight into the decision to have a child in modern conditions.

To achieve such insight, one must enrich rational choice models by incorporating noninstrumental motivations. By examining one highly measurable outcome—the decision to have one child or more, or to have none—this paper has considered both strategies of incorporating immanent values. The survey strategy, which imputes noninstrumental values, seems inherently to be limited to post hoc analysis. Instead in this paper we assume the universality of the immanent value of uncertainty reduction and employ this assumption to explain the decision for or against parenthood. Together with the secondary assumption, namely marital solidarity enhancement, uncertainty reduction allows us to propose a theory of the value of children from which many different hypotheses may be deduced. This value does not concern parenthood per se; the outcomes of parenthood and of childlessness are not about children, but about people's preferences for their own well-being.

We began by discussing the limits of instrumental models of fertility decline, arguing that their logic contained nothing to explain why individuals would have children under modern conditions. This point led us to ask why people in fact continue to have children, albeit in reduced numbers. We do not claim to have an alternative theory to account for fertility decline, but we wonder whether the uncertainty reduction theory may enhance the conclusions reached by more familiar instrumental models.

In traditional circumstances, children were doubly important for uncertainty reduction, both because of their ability to provide wealth and insurance for their aging parents and for their contribution to social integration. The first set of contributions, but not the second, diminished in value over time. This temporal shift in the value of children suggests, as does the economic theory of fertility decline, that the number of children demanded should diminish—but not to zero.

NOTES

¹ Other, more comprehensive taxonomies of the determinants of fertility include Davis and Blake (1956) and Bongaarts and Potter (1983, chs. 2 and 3). In contrast to our microanalytic approach, both of these papers are decidedly macrostructural analyses, devoid of any conception of individual actors even in discussing such phenomena as intercourse, conception, and gestation. Thus, "if, for example, a society uses contraception successfully, it has a *minus* value with respect to [use of contraception]; if it uses *no* contraception, it has a *plus* value on this variable" (Davis and Blake 1956:213). Moreover, both papers are completely mute about parents' desire for children, the major focus of this paper.

² Because the World Fertility Surveys contained little information that was unambiguously useful for testing economic hypotheses, this conclusion may not be surprising.

³ When value-oriented action mandates precisely the same behavior as externally motivated action, we have no way of knowing which kind of motivation was fundamental to us. Hence, although we may hold many values that are consistent with prevailing incentives, the only values that we can infer reliably from our own choices are those which are inconsistent with such incentives (Hechter 1992; Jones and Davis 1965; Jones and McGillis 1976).

⁴ See, below, however, the discussion of the Pennsylvania school model of fertility. By endogenizing values, the Pennsylvanians introduce a certain value heterogeneity and still can predict social outcomes.

⁵ Two other common value assumptions that leap to mind are *prestige maximization* and *power maximization*. Both prestige and power are somewhat fungible and hence can be converted into a wide

range of immanent values, but neither is as measurable as wealth. Yet because individuals are likely to make different trade-offs for these goods, the social implications of maximizing across these multiple value domains are unclear.

⁶ The effect of income on fertility is complex. Julian Simon (1974) distinguishes between the short- and the long-run effects, and shows that in developed societies, income has a positive short-run effect but a negative long-run effect. Turchi (1975) argues that the relationship between income and fertility has two components: a positive *income* effect, whereby couples with higher expected lifetime incomes can afford to have more children, and a negative *price* effect, whereby the same couples incur higher opportunity costs.

⁷ Time intensity has a specific meaning for Becker: it means that the the ratio of time to purchased market inputs is higher in childrearing than in any other nonmarket consumption activity. As one reviewer notes, however, this is a dubious claim.

⁸ Survey data on the distribution of these values are found in Hoffman, Thornton, and Manis (1978). These attitudes are subject to an analysis based on the following notion: the value of children is treated as a function of 1) the intensity of a psychological need, 2) the extent to which children are viewed as a potential source of satisfaction for the need, and 3) the availability of alternative sources of satisfaction for that need. The study's key hypothesis is that subgroups which have fewer alternatives to satisfy the various psychic needs will value children more highly than others who can turn to other sources for satisfaction of needs. The test of this hypothesis is inconclusive, however.

⁹ The distinction between uncertainty and risk dates back to Knight ([1921] 1971). In the decision theoretical literature, however, the terms often are used (most unfortunately) interchangeably: Kahneman, Slovic, and Tversky (1982), for instance, speak of "judgment under uncertainty," whereas Kahneman and Tversky (1979) discuss "decision under risk." According to the definitions presented here, Kahneman and Tversky's prospect theory is all about risk and not at all about uncertainty.

¹⁰ Both social and psychological theory have a long tradition that regards uncertainty reduction—particularly as it relates to the time and conditions of one's death—as the fundamental motivation for all human behavior. Thus aversion to death was Hobbes's principal behavioral postulate. For an excellent discussion of this tradition in psychology, as well as a research program based on it which has implications for a wide range of social behavior, see Solomon, Greenberg, and Pyszczynski (1991). From a Durkheimian perspective, actors facing anomie might be expected to engage in those behaviors (such as parenthood) for which stable normative expectations continue to exist. Finally, the mechanism animating Weber's ([1920–1921] 1976) theory of capital accumulation was uncertainty reduction in the face of predestination.

¹¹ Recent research shows that individual behavior deviates further from purely instrumental behavior under uncertainty than it does under risk (Tversky and Fox 1994).

¹² It may be doubtful whether couples actually can make joint decisions regarding parenthood. Morgan (1985), however, shows that husbands and wives know their joint intention, that they know their spouses' individual desires, and that they weigh both their own and their spouses' desires when stating the couple's intent.

¹³ From this vantage point, although parenthood is a collective good, there are ample reasons to expect the production of collective goods in small groups (Axelrod 1984; Hechter 1987; Taylor 1976).

¹⁴ The considerable empirical literature on heterogamy and marital stability does not address this question directly.

¹⁵ For instance, Wilson's (1987) influential work and his notion of the "male marriageable pool index" explain nonmarital fertility among young African-American women in terms of the characteristics of African-American *men*, particularly their prospects for stable employment. As shown by our next hypothesis (U-3), we explain the same phenomenon in terms of the prospects for stable employment (and marriage) for African-American *women* themselves.

¹⁶ Many promarital groups are also pronatalist. The conjunction of these two norms does not weaken the theoretical point, although it makes empirical testing of this hypothesis difficult.

¹⁷ A critic might argue that our behavioral assumptions are unrealistic. If this were so, would the theory be rendered useless? Some scholars have noted that many unrealistic or oversimplified assumptions about individual behavior have served useful purposes in constructing macro-level theories (Lawler, Ridgeway, and Markovsky 1993; Stinchcombe 1991). Further, theories should be evaluated not by the empirical validity of assumptions, but by that of *hypotheses* (Jasso 1988). "Truly

important and significant hypotheses will be found to have 'assumptions' that are wildly inaccurate descriptive representations of reality, and, in general, the more significant the theory, the more unrealistic the assumptions (in this sense)" (Friedman 1953:14). "'Assumption mongering,' showing that the theories of the mechanisms [i.e. behavioral assumptions] are not true, is therefore seldom a useful strategy in scientific theorizing at an aggregate level" (Stinchcombe 1991:384).

¹⁸ Those with two or more children, however, have a higher likelihood of marital disruption than childless couples for the first two years of marriage (Morgan, et al. 1988).

REFERENCES

- Ainslie, G. 1992. *Picoeconomics: The Strategic Interaction of Successive Motivational States within the Person*. UK: Cambridge University Press.
- Akerlof, G.A. and J.L. Yellen. 1993. "The Fair Wage/Effort Hypothesis and Unemployment." Pp. 107–34 in *The Origin of Values*, edited by M. Hechter, L. Nadel, and R.E. Michod. Hawthorne, NY: Aldine.
- Alwin, D.F. 1973. "Making Inferences from Attitude-Behavior Correlations." *Sociometry* 36:253–78.
- Axelrod, R. 1984. *The Evolution of Cooperation*. New York: Basic Books.
- Becker, G.S. 1960. "An Economic Analysis of Fertility." Pp. 209–31 in *Demographic and Economic Change in Developed Countries*, edited by the Universities-National Bureau Committee for Economic Research. Princeton: Princeton University Press (for the National Bureau of Economic Research).
- . 1981. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- . 1992. "Habits, Addictions, Traditions." *Kyklos* 45(3):327–46.
- Becker, G.S. and R.S. Barro. 1987. "Altruism and the Economic Theory of Fertility." Pp. 69–76 in *Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies*, edited by K. Davis, M.S. Bernstam, and R. Ricardo-Campbell. Cambridge, UK: Cambridge University Press.
- Blake, J. 1968. "Are Babies Consumer Durables?" *Population Studies* 22:5–25.
- Bloom, D.E. and A.R. Pebley. 1982. "Voluntary Childlessness: A Review of the Evidence and Implications." *Population Research and Policy Review* 1:203–24.
- Bloom, D.E. and J. Trussell. 1984. "What Are the Determinants of Delayed Childbearing and Permanent Childlessness in the United States?" *Demography* 21:591–611.
- Blossfeld, H.-P. and U. Jaenichen. 1992. "Educational Expansion and Changes in Women's Entry into Marriage and Motherhood in the Federal Republic of Germany." *Journal of Marriage and the Family* 54:302–15.
- Bongaarts, J. and R.G. Potter. 1983. *Fertility, Biology, and Behavior: An Analysis of the Proximate Determinants*. New York: Academic Press.
- Boyd, R.L. 1989a. "Childlessness and Social Mobility during the Baby Boom." *Sociological Spectrum* 9:425–38.
- . 1989b. "Minority Status and Childlessness." *Sociological Inquiry* 59:331–42.
- Brenner, R. 1983. *History: The Human Gamble*. Chicago: University of Chicago Press.
- Brewster, K.L. 1994. "Race Differences in Sexual Activity among Adolescent Women: The Role of Neighborhood Characteristics." *American Sociological Review* 59:408–24.
- Brewster, K.L., J.O.G. Billy, and W.R. Grady. 1993. "Social Context and Adolescent Behavior: The Impact of Community on the Transition to Sexual Activity." *Social Forces* 71:713–40.
- Bumpass, L.L. and E.K. Mburugu. 1977. "Age at Marriage and Completed Family Size." *Social Biology* 24:31–37.
- Burman, B. and D. de Anda. 1986. "Parenthood or Nonparenthood: A Comparison of Intentional Families." *Lifestyles: A Journal of Changing Patterns* 8(2):69–84.
- Butz, W.P. and M.P. Ward. 1979. "The Emergence of Countercyclical Fertility." *American Economic Review* 69(3):318–28.
- Cain, M.T. 1978. "The Household Life Cycle and Economic Mobility in Rural Bangladesh." *Population and Economic Review* 4:421–38.

- Cain, M.T., S.R. Khanam, and S. Nahar. 1979. "Class, Patriarchy, and Women's Work in Bangladesh." *Population and Development Review* 5:405-38.
- Caldwell, J.C. 1981. "An Explanation of the Continued Fertility Decline in the West: Stages, Succession and Crisis." Working paper, Department of Demography, Australian National University.
- Callan, V.J. 1982. "How Do Australians Value Children? A Review and Research Update Using the Perceptions of Parents and Voluntarily Childless Adults." *Australian and New Zealand Journal of Sociology* 18:384-98.
- Campbell, A.A. 1968. "The Role of Family Planning in the Reduction of Poverty." *Journal of Marriage and the Family* 30:236-45.
- Cleland, J. 1985. "Marital Fertility Decline in Developing Countries: Theories and the Evidence." Pp. 223-52 in *Reproductive Change in Developing Countries: Insights from the World Fertility Survey*, edited by J. Cleland and J. Hobcraft. London: Oxford University Press.
- Converse, P.E. 1964. "The Nature of Belief Systems in Mass Publics." Pp. 206-61 in *Ideology and Discontent*, edited by D.E. Apter. Glencoe, IL: Free Press.
- Curtis, R.F. 1959. "Occupational Mobility and Urban Social Life." *American Journal of Sociology* 65:296-98.
- Davis, K., M.S. Bernstam, and R. Ricardo-Campbell, eds. 1987. *Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies*. Cambridge, UK: Cambridge University Press.
- Davis, K. and J. Blake. 1956. "Social Structure and Fertility: An Analytic Framework." *Economic Development and Cultural Change*. 4(3):211-35.
- Easterlin, R.A. 1966. "On the Relation of Economic Factors to Recent and Projected Fertility Changes." *Demography* 3:131-53.
- . 1980. *Birth and Fortune: The Impact of Numbers on Personal Welfare*. New York: Basic Books.
- Easterlin, R.A., R.A. Pollak, and M.L. Wachter. 1980. "Towards a More General Model of Fertility Determination: Endogenous Preferences and Natural Fertility." Pp. 81-135 in *Population and Economic Change in Less Developed Countries*, edited by R.A. Easterlin. Chicago: University of Chicago Press.
- Ellsberg, D. 1961. "Risk, Ambiguity, and the Savage Axioms." *Quarterly Journal of Economics* 75:643-69.
- Emerson, R.A. 1962. "Power-Dependence Relations." *American Sociological Review* 27:31-41.
- Feldman, H. 1981. "A Comparison of Intentional Parents and Intentionally Childless Couples." *Journal of Marriage and the Family* 43:593-600.
- Fischhoff, B. 1993. "Value Elicitation: Is There Anything in There?" Pp. 187-214 in *The Origin of Values*, edited by M. Hechter, L. Nadel, and R.E. Michod. Hawthorne, NY: Aldine.
- Frank, R.H. 1985. *Choosing the Right Pond*. New York: Oxford University Press.
- Freshnock, L. and P. Cutright. 1978. "Structural Determinants of Childlessness: A Nonrecursive Analysis of 1970 U.S. Rates." *Social Biology* 25:169-78.
- Freud, S. (1930) 1961. *Civilization and Its Discontents*. New York: Norton.
- Friedman, D. and B. Weingast. 1993. "Rational Choice and Freudian Accounts of Cooperation." Presented at the annual meetings of the Public Choice Society, New Orleans.
- Friedman, M. 1953. *Essays in Positive Economics*. Chicago: University of Chicago Press.
- Geiss, L.S., D.R. McSeveney, and H.H. Floyd, Jr. 1983. "Parenthood and Marital Happiness." *International Journal of Sociology of the Family* 13:159-76.
- Geronimus, A.T. 1987. "On Teenage Childbearing and Neonatal Mortality in the United States." *Population and Development Review* 13:245-79.
- Gerson, K. 1985. *Hard Choices: How Women Decide about Work, Career, and Motherhood*. Berkeley: University of California Press.
- Goldscheider, F.K. and L.J. Waite. 1991. *New Families, No Families? The Transformation of the American Home*. Berkeley: University of California Press.
- Goode, W.J. 1956. *Women in Divorce*. Westport, CT: Greenwood Press.
- . 1976. "Family Disorganization." Pp. 511-56 in *Contemporary Social Problems*, 4th ed., edited by R.K. Merton and R. Nisbet. San Diego: Harcourt Brace Jovanovich.

- Goszczyńska, M., T. Tyszka, and P. Slovic. 1991. "Risk Perception in Poland: A Comparison with Three Other Countries." *Journal of Behavioral Decision Making* 4:179-93.
- Heath, A. 1981. *Social Mobility*. London: Fontana.
- Hechter, M. 1987. *Principles of Group Solidarity*. Berkeley: University of California Press.
- . 1992. "Should Values Be Written out of the Social Scientist's Lexicon?" *Sociological Theory*. 10:214-30.
- . 1994. "The Role of Values in Rational Choice Theory." *Rationality and Society* 6:318-33.
- Hechter, M., L. Nadel, and R.E. Michod. 1993. *The Origin of Values*. Hawthorne, NY: Aldine.
- Hill, R.J. 1981. "Attitudes and Behavior." Pp. 347-77 in *Social Psychology: Sociological Perspectives*, edited by M. Rosenberg and R.H. Turner. New York: Basic Books.
- Hodge, R.W. and N. Ogawa. 1991. *Fertility Change in Contemporary Japan*. Chicago: University of Chicago Press.
- Hoffman, L.W. and M.L. Hoffman. 1973. "The Value of Children to Parents." Pp. 19-76 in *Psychological Perspectives on Population*, edited by J.T. Fawcett. New York: Basic Books.
- Hoffman, L.W. and J.D. Manis. 1979. "The Value of Children in the United States: A New Approach to the Study of Fertility." *Journal of Marriage and the Family* 41:583-96.
- Hoffman, L.W., A. Thornton, and J.D. Manis. 1978. "The Value of Children to Parents in the United States." *Journal of Population* 1:91-131.
- Hoffman, S.R. and R.F. Levant. 1985. "A Comparison of Childfree and Child-Anticipated Married Couples." *Family Relations* 34:197-203.
- Houseknecht, S.K. 1979. "Childlessness and Marital Adjustment." *Journal of Marriage and the Family* 43:125-41.
- Jacobson, C.K. and T.B. Heaton. 1991. "Voluntary Childlessness among American Men and Women in the Late 1980's." *Social Biology* 38:79-93.
- Jasso, G. 1988. "Principles of Theoretical Analysis." *Sociological Theory* 6:1-20.
- . 1989. "Notes on the Advancement of Theoretical Sociology." *Sociological Theory* 7:135-44.
- Jessor, R. and S.L. Jessor. 1977. *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York: Academic Press.
- Jones, E.E. and K.E. Davis. 1965. "From Acts to Dispositions: The Attribution Process in Person Perception." Pp. 219-66 in *Advances in Experimental Social Psychology*, Vol. 2, edited by L. Berkowitz. New York: Academic Press.
- Jones, E.E. and D. McGillis. 1976. "Correspondent Inferences and the Attribution Cube: A Comparative Reappraisal." Pp. 389-420 in *New Directions in Attribution Research*, Vol. 1, edited by J.H. Harvey, W.J. Ickes, and R.F. Kidd. Hillsdale, NJ: Erlbaum.
- Kahneman, D., Paul S., and A. Tversky., eds. 1982. *Judgment under Uncertainty: Heuristics and Biases*. New York: Cambridge University Press.
- Kahneman, D., and A. Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47(2):363-91.
- Kenkel, W.F. 1985. "The Desire for Voluntary Childlessness Among Low-Income Youth." *Journal of Marriage and the Family* 47:509-12.
- Keyfitz, N. 1987. "The Family That Does Not Reproduce Itself." Pp. 139-54 in *Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies*, edited by K. Davis, M.S. Bernstam and R. Ricardo-Campbell. Cambridge, UK: Cambridge University Press.
- Kiernan, K.E. 1989. "Who Remains Childless?" *Journal of Biosocial Science* 21:387-98.
- . 1992. "The Impact of Family Disruption in Childhood on Transitions Made in Young Adult Life." *Population Studies* 46:213-34.
- Knight, F.H. (1921) 1971. *Risk, Uncertainty and Profit*. Chicago: University of Chicago Press.
- Lawler, E.J., C. Ridgeway, and B. Markovsky. 1993. "Structural Social Psychology and the Micro-Macro Problem." *Sociological Theory* 11:268-90.
- Lea, S.E.G., R.M. Tardy and P. Webley. 1987. *The Individual in the Economy: A Survey of Economic Psychology*. Cambridge, UK: Cambridge University Press.
- Lehrer, E.L. and C.U. Chiswick. 1993. "Religion as a Determinant of Marital Stability." *Demography* 30:385-404.
- Lemasters, E.E. 1954. "Social Class Mobility and Family Integration." *Marriage and Family Living* 16:226-32.

- Lesthaege, R. 1983. "A Century of Demographic and Cultural Change in Western Europe: An Exploration of Underlying Dimensions." *Population and Development Review* 9(3):411-35.
- Lillard, L.A. and L.J. Waite. 1993. "A Joint Model of Marital Childbearing and Marital Disruption." *Demography* 30:653-81.
- Lipset, S.M. and R. Bendix. 1959. *Social Mobility in Industrial Society*. Berkeley: University of California Press.
- MacGregor, D.G. and P. Slovic. 1989. "Perception of Risk in Automotive Systems." *Human Factors* 31:377-89.
- Martín, T.C. 1992. "Delayed Childbearing in Contemporary Spain: Trends and Differentials." *European Journal of Population* 8:217-46.
- Mattessich, P.W. 1979. "Childlessness and Its Correlates in Historical Perspectives: A Research Note." *Journal of Family History* 4:299-307.
- Maxwell, N.L. 1991. "Individual and Aggregate Influences on the Age at First Birth." *Population Research and Policy Review* 10:27-46.
- McLaughlin, S.D. and M. Micklin. 1983. "The Timing of the First Birth and Changes in Personal Efficacy." *Journal of Marriage and the Family* 45:47-55.
- Miller, W.B. 1992. "Personality Traits and Developmental Experiences as Antecedents of Childbearing Motivation." *Demography* 29:265-85.
- Modell, J., F.F. Furstenberg, Jr., and D. Strong. 1978. "The Timing of Marriage in the Transition to Adulthood: Continuity and Change, 1860-1975." *American Journal of Sociology* 84:S120-50.
- Morgan, S.P. 1985. "Individual and Couple Intentions for More Children." *Demography* 22:125-32.
- _____. 1991. "Late Nineteenth- and Early Twentieth-Century Childlessness." *American Journal of Sociology* 97:779-807.
- Morgan, S.P., D.N. Lye, and G.A. Condran. 1988. "Sons, Daughters, and the Risk of Marital Disruption." *American Journal of Sociology* 94:110-29.
- Mosher, W.D. and C.A. Bachrach. 1982. "Childlessness in the United States: Estimates from the National Survey of Family Growth." *Journal of Family Issues* 3:517-43.
- Ochs, J. and A.E. Roth. 1989. "An Experimental Study of Sequential Bargaining." *American Economic Review* 79(3):355-84.
- Orbell, J. 1993. "Hamlet and the Psychology of Rational Choice Under Uncertainty." *Rationality and Society* 5(1):127-40.
- Poston, D.L., Jr., and K.B. Kramer. 1986. "Patterns of Childlessness among Catholic and Non-Catholic Women in the U.S.: A Log-Linear Analysis." *Sociological Inquiry* 56:507-22.
- Preston, S.H. 1987. "Changing Values and Falling Birth Rates." Pp. 176-95 in *Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies* edited by K. Davis, M.S. Bernstam, and R. Ricardo-Campbell. Cambridge, UK: Cambridge University Press.
- Ramu, G.N. 1984. "Family Background and Perceived Marital Happiness: A Comparison of Voluntarily Childless Couples and Parents." *Canadian Journal of Sociology* 9:47-67.
- Ramu, G.N. and N. Tavuchis. 1986. "The Valuation of Children and Parenthood Among the Voluntarily Childless and Parental Couples in Canada." *Journal of Comparative Family Studies* 17:99-116.
- Renne, K.S. 1976. "Childlessness, Health, and Marital Satisfaction." *Social Biology* 23:183-97.
- Rindfuss, R.R. and L.L. Bumpass. 1977. "How Old Is Too Old? Age and the Sociology of Fertility." *Family Planning Perspectives* 8:226-30.
- Rindfuss, R.R., L.L. Bumpass, and C. St. John. 1980. "Education and Fertility: Implications for the Roles Women Occupy." *American Sociological Review* 45:431-47.
- Rindfuss, R.R., S. P. Morgan, and C. G. Swicegood. 1984. "The Transition to Motherhood: The Intersection of Structural and Temporal Dimensions." *American Sociological Review* 49:359-72.
- Rindfuss, R.R. 1988. *First Births in America*. Berkeley: University of California Press.
- Rindfuss, R.R. and A.M. Parnell. 1989. "The Varying Connection between Marital Status and Childbearing in the United States." *Population and Development Review* 15:447-70.
- Rindfuss, R.R. and C. St. John. 1983. "Social Determinants of Age at First Birth." *Journal of Marriage and the Family* 45:553-65.
- Ritchey, P. N. and C. S. Stokes. 1974. "Correlates of Childlessness and Expectations to Remain Childless: U.S. 1967." *Social Forces* 52:349-56.
- Ryder, N.B. 1979. "The Future of American Fertility." *Social Forces* 26(3):359-70.

- Samuelson, P.A. 1947. *Foundations of Economic Analysis*. Cambridge, MA: Harvard University Press.
- Sanderson, W.C. 1980. "Comment on Easterlin, Pollak and Wachter's 'Towards a More General Model of Fertility Determination: Endogenous Preferences and Natural Fertility.'" Pp. 140–44 in *Population and Economic Change in Less Developed Countries*, edited by R.A. Easterlin. Chicago: University of Chicago Press.
- Schultz, T.P. 1987. "The Value and Allocation of Time in High-Income Countries: Implications for Fertility." Pp. 87–107 in *Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies*, edited by K. Davis, M.S. Bernstam and R. Ricardo-Campbell. Cambridge, UK: Cambridge University Press.
- Schuman, H. and M.P. Johnson. 1976. "Attitudes and Behavior." *Annual Review of Sociology* 2:161–208.
- Schumpeter, J.A. (1942) 1975. *Capitalism, Socialism and Democracy*. New York: Harper.
- Simon, H. A. 1986. "Rationality in Psychology and Economics." Pp. 25–40 in *Rational Choice: The Contrast between Economics and Psychology*, edited by R.M. Hogarth and M.W. Reder. Chicago: University of Chicago Press.
- Simon, J.L. 1974. *The Effects of Income on Fertility*. Chapel Hill: Carolina Population Center.
- Slovic, P.. 1987. "Perception of Risk." *Science* 236:280–85.
- Solomon, S., J. Greenberg and T. Pyszczynski. 1991. "A Terror Management Theory of Social Behavior: The Psychological Functions of Self-Esteem and Cultural Worldviews." *Advances in Experimental Social Psychology* 24:93–159.
- Somers, M.D. 1993. "A Comparison of Voluntarily Childfree Adults and Parents." *Journal of Marriage and the Family* 55:643–50.
- South, S.J. and K.M. Lloyd. 1992. "Marriage Markets and Nonmarital Fertility in the United States." *Demography* 29:247–64.
- Stigler, G. and G.S. Becker. 1977. "De Gustibus Non Est Disputandum." *American Economic Review* 62(2):76–90.
- Stinchcombe, A.L. 1990. *Information and Organizations*. Berkeley: University of California Press.
- . 1991. "The Conditions of Fruitfulness of Theorizing about Mechanisms in Social Science." *Philosophy of the Social Sciences* 21:367–88.
- Taylor, M. 1976. *Anarchy and Cooperation*. London: John Wiley.
- Teigen, K.H., W. Brun, and P. Slovic. 1988. "Societal Risks as Seen by a Norwegian Public." *Journal of Behavioral Decision Making* 1:111–30.
- Tolnay, S.E. 1980. "Black Fertility Decline: Urban Differentials in 1900." *Social Biology* 27:249–60.
- Tolnay, S.E. and A.M. Guest. 1982. "Childlessness in a Transitional Population: The United States at the Turn of the Century." *Journal of Family History* 7:200–19.
- Tomes, N. 1985. "Childlessness in Canada 1971: A Further Analysis." *Canadian Journal of Sociology* 10:37–68.
- Turchi, B.A. 1975. *The Demand for Children: The Economics of Fertility in the United States*. Cambridge, MA: Ballinger.
- Tversky, A. and C. Fox. 1994. "Weighing Risk and Uncertainty." Unpublished manuscript, Department of Psychology, Stanford University.
- Tversky, A., S. Sattath and P. Slovic. 1988. "Contingent Weighting in Judgment and Choice." *Psychological Review* 95(3):371–84.
- Tzeng, M.-S. 1992. "The Effects of Socioeconomic Heterogamy and Changes on Marital Dissolution for First Marriages." *Journal of Marriage and the Family* 54:609–19.
- Veevers, J.E. 1980. *Childless by Choice*. Toronto: Butterworths.
- von Neumann, J. and O. Morgenstern. 1944. *Theory of Games and Economic Behavior*. Princeton: Princeton University Press.
- Walter, C.A. 1986. *The Timing of Motherhood*. Lexington: Heath.
- Weber, M. (1920–1921) 1976. *The Protestant Ethic and the Spirit of Capitalism*, translated by Talcott Parsons. New York: Scribner's.
- Westoff, C.F. 1978. "Marriage and Fertility in the Developed Countries." *Scientific American* 239:51–57.
- . 1987. "Perspective on Nuptiality and Fertility." Pp. 155–70 in *Below-Replacement Fertility*

- in Industrial Societies: Causes, Consequences, Policies*, edited by K. Davis, M.S. Bernstam, and R. Ricardo-Campbell. Cambridge, UK: Cambridge University Press.
- Wilk, C.A. 1986. *Career Women and Childbearing: A Psychological Analysis of the Decision Process*. New York: Van Nostrand Reinhold.
- Wilson, W.J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.
- Wineberg, H. 1988. "Duration between Marriage and First Birth and Marital Instability." *Social Biology* 35:91-102.
- Wolowyna, J.E. 1977. "Income and Childlessness in Canada: A Further Examination." *Social Biology* 24:326-31.
- Yogev, S. and A. Vierra. 1983. "The State of Motherhood Among Professional Women." *Sex Roles* 9:391-96.