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ABSTRACT

Examined in this document is the effect the age at which a young woman has her first birth has on her later childbearing. Data from the Michigan Panel Study of Income Dynamics and the National Longitudinal Survey of Young Women are used in conjunction with a review of related literature in examining such factors as fertility, premarital pregnancy, religious background, educational achievement, family background, labor force status, race, birth cohort, age, and social class, and their roles in affecting subsequent family size. Findings presented indicate that the initiation of parenthood during the teen years seems to be associated with considerably larger families later in life. In addition, it is pointed out that given the high cost of rearing children to adulthood, teenage mothers face heavy economic demands over a long period of time, potentially contributing to poverty and/or welfare recipiency. (Author/EB)

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THE CONSEQUENCES OF AGE AT FIRST CHILDBIRTH: FAMILY SIZE

by

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THE CONSEQUENCES OF AGE AT FIRST CHILDBIRTH: FAMILY SIZE

Family size is important to the social and economic well-being of families. The number of children in a family can greatly affect the adequacy of a family's income. For this reason, the Department of Health, Education and Welfare considers both family income and composition in its measure of poverty. In 1975, 8.2 percent of two-person families fell at or below the poverty level compared to 13.5 percent of families with five or more persons (Brown, 1976: Table 13). Besides economic well-being, there is evidence that children from large families obtain lower IQ scores (Zajonc, 1976) and that a large proportion of children in high-parity families were not prenatally wanted (Weller, 1976; Westoff, 1976). Finally, and probably intervening between family size and household income and poverty, there is a well documented negative association between family size and labor force participation among women (Sweet, 1968; Mason, 1974). It is therefore important to establish the effect which the age at which a young woman has her first birth can be expected to have on her later childbearing.

early age is associated with a high proportion of subsequent unwanted births. Given evidence that the majority of teenage first births are unplanned (Zelnik and Kantner, 1974; Presser, 1976), and that parous young women are more likely to experience a pregnancy than are nulliparous women (Dempsey, 1970), it seems that an early first pregnancy is likely to be followed by other births in fairly rapid order, exceeding the preferences of the mother and resulting in larger eventual family sizes.

Most previous work that has approached this issue, both abroad and in the United States, has concentrated upon age at first marriage. In those developing countries in which intercourse typically occurs only after marriage, a young age at a marriage is so regularly associated with higher fertility (Kim, 1974), that a standard recommendation for lowering the birth rates in such nations has been to raise the average at first marriage (e.g., Ehrlich and Ehrlich, 1970). Analysis of the 1970 National Fertility Study data has produced a similar conclusion for the United States, "Probably the best single predictor of fertility uncovered in our study is age at marriage" (Westoff, 1975).

However, given the increasing tendency for couples to postpone childbearing after marriage (U.S. Census Bureau, 1978) together with a reduction in the age at first intercourse in the United States, and an increase in the incidence of premarital sexual experience (Moore and Caldwell, 1977; Zelnik and Kantner, 1977), the association between age at marriage and eventual fertility may be breaking down. Actually, age at first birth may have always been the preferred fertility predictor.

Several studies that have looked at the impact of age at first birth on later fertility have uncovered strong associations. Bonham and Placek (1975) report preliminary results from two large data sets that indicate a strong

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Presser (1971) has argued persuasively that the occurrence of an early first birth can have a critical impact on the size of a young woman's completed family.

> The impact of the mother role on participation in other roles is greatest at the time of the first birth... When nonfamilial role options to be shared with motherhood, and possibly wifehood, are limited to a few low status choices, subsequent fertility -- wanted or unwanted, legitimate or illegitimate -- may be easier to accept. Consequently, motivation to effectively practice contraception and/or abortion after an early unwanted first birth may be minimized.

The lack of exposure to alternate roles that is likely to occur when a teenager's time and energy must be devoted to the continual care of an infant, may well result in a life more centered on motherhood than would have been the case if exposure to and experience with other roles had taken place. In addition, the reduction in education (Waite and Moore, 1978; Moore et al, 1978) suggests that Presser is probably correct that early childbearers have only a few, rather low status choices--most likely fairly uninteresting and low-paid jobs--that present alternatives to further childbearing. Low education has been found to be associated with less adequate contraceptive effectiveness as well (Michael, 1974).

Another reason to expect early childbearers to have larger completed families may be found in differential fecundity. Utilization of contraception among adolescents is so inadequate in general (Kantner and Zelnick, 1973) that natural fecundity may be an important factor in selecting some girls into the ranks of motherhood in the first place and then in repeating pregnancy at an above-average pace. Also, having begun childbearing at a relatively early age, a teenage mother has a longer exposure to the risk of childbearing. Bauman and Udry (1973) report that reaching desired completed parity at an

negative association between age at first birth and expected number of births among ever-married mothers under age 45 (see Table 1).

TABLE 1

AGE OF MOTHER AT FIRST BIRTH BY TOTAL BIRTHS EXPECTED PER 1,000 EVER-MARRIED MOTHERS UNDER AGE 45

Age at First Birth	Births Expected Per 1,000 Ever Married Mothers: National Natality Survey, 1972 (N = 2,818)	National Survey of Family Growth, 1973 (N = 21,201)
Under 18 years	3,393	3,766
18-19 years	3,126	3,224
20-21	3,106	3,050
22-24	2,904	2,787
25-29	2,854	2,494
30+	2,937	2,144

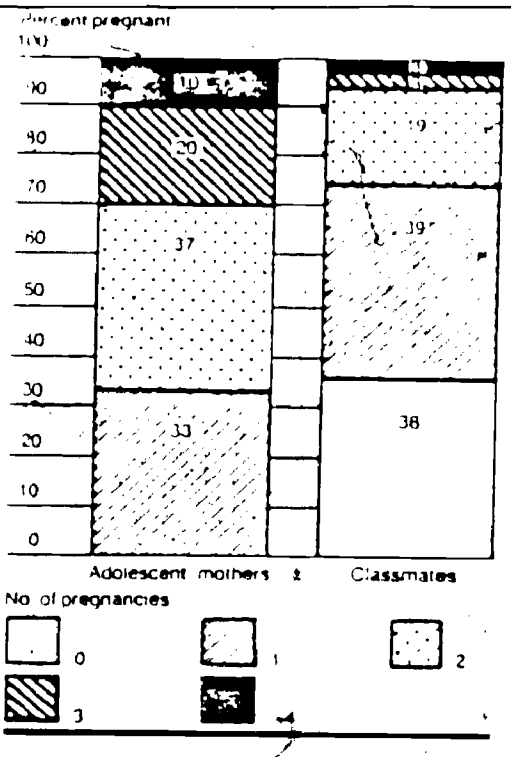
Source: Bonham and Placek, 1975, Table 2; presented by special permission of authors

Furstenberg's (1976) study of a sample of young, primarily black, premaritally pregnant mothers over a period of six years found these teenage mothers to have considerably more children in the five years following their first birth than did a comparison sample of their classmates.

Bumpass et al. (1978) have also found that women bearing their first child during the teen years tend to have higher subsequent fertility, as do women whose first conception occurred premaritally. Effects were found to be strongest in the inverval following first birth; but effects lingered into the fourth interval. Similarly, Trussell and Menken (1978) report that 15 years after their first birth, women whose first child was born during their teen years have borne more children than women who initiated childbearing during their twenties.

FIGURE 1

PERCENT OF ADOLESCENT MOTHERS AND CLASSMATES PREGNANT, BY NUMBER OF PREGNANCIES IN 1972



In any analyses of the association between age at first birth and later fertility, it is of course critical to control for factors previously found to affect family size. Controls include socioeconomic background (Ryder and Westoff, 1971; Westoff, et al., 1961; Whelpton, et al., 1966), education (Bureau of the Census, 1975: Janowitz, 1976), race (Bureau of the Census, 1975), farm background (Westoff, et al., 1961; Whelpton and Kiser, 1946-1948, Whelpton, et al., 1966); and the number of respondent's siblings (Johnson and Stokes, 1976).

In analyses of the National Longitudinal Survey (NLS) women at age 24, the respondent's age in 1968, the year of the initial survey, is included as a control for a cohort effect. This is necessary because of the steady decline in fertility occurring during recent years (Bureau of the Census, 1975; Hudis, 1977;

National Center for Health Statistics, 1978). Analyses employing the Panel Study of Income Dynamics (PSID) women interviewed in the year 1976 include respondents who vary greatly in age. Consequently, the respondent's age in 1976 serves as a control for both age cohort and for life cycle stage. Since only older women can safely be argued to have completed childbearing, in some analyses we physically divide the PSID sample into sub-samples according to the age of the woman. And, of course, measures of age at first marriage and premarital pregnancy will also be included. Although religion and religiosity have traditionally been found to affect family size (Westoff, et al., 1961; Ryder and Westoff, 1971) no measures were included in the NLS survey. Measures are available for PSID analyses, however.

Whether to include measures that control for the labor force status of the wife is a difficult question. Plausible arguments can be made that fertility affects employment (such that women with many children find working difficult or undesirable), that employment affects fertility (such that women who want or expect to work reduce their fertility), that simultaneous causality exists, and that the association is spurious and due to some other common antecedent factor (Weller, 1977; Waite and Stolzenberg, 1976). Waite and Stolzenberg (1976) have reported that labor force participation plans affect the number of children a woman plans to bear; but that childbearing plans have only a small effect on labor force participation plans. On the other hand, it has been found that current or completed fertility is a more important predictor of proportion of married life spent in the labor force than vice versa (Tickamyer and Smith-Lovin, 1978). There is no accepted resolution of this matter; we assume that like most social science issues, a great deal of research will probably find that the direction of causality varies greatly among different groups, for example, by birth cohort, social

class, reason for working, perhaps race and age, and maybe even sex role ideology. In the absence of a definitive literature, we have decided to omit current and recent labor force participation as predictors of fertility. This implies a conviction that in a sample of young mothers, the causal direction is from fertility to labor force participation, and that among the older generation of PSID women, fertility had a stronger effect on employment than labor force participation had on fertility. Our reasoning is that in a sample of young respondents all of whom have children, it is the presence of these children that affects whether and how much a woman works (mediated, of course, by her attitudes about employment, child care availability, and husband's attitudes). Among older women, labor force participation was fairly uncommon among mothers, and the presence and number of children were strong determinants of employment. Therefore, labor force participation is more likely to be an effect than a cause of family size. One variable in the PSID data set measures whether a woman worked early in marriage. Since for most women this period is temporally prior to family building, this measure of labor force participation has been included in the PSID regressions.

DATA

Analyses were conducted on two national longitudinal data sets, the National Longitudinal Survey of Young Women (NLS) and the Panel Study of Income Dynamics (PSID). Both surveys were initially fielded in 1968 and in each case respondents were interviewed annually. While similar in their focus on economic and employment issues, the two surveys sample quite different populations. Analyses reported here rely on interviews conducted between 1968 and 1972 for the NLS and between 1968 and 1976 for the PSID. Each data set will be described in turn.

The National Longitudinal Survey of Young Women

The National Longitudinal Survey of Young Women (NLS) is funded by the U.S. Department of Labor to study the labor market experiences of contemporary young women. It is designed by the Center for Human Resource Research of Ohio State University and fielded by the U.S. Census Bureau. The initial wave in 1968 sampled over 5000 young women between the ages of 14 and 24. Attempts to reinterview these young women were made annually from 1969 through 1975. Sample retention has been very good. By 1972, the last year considered here, 4625 respondents -- 90 percent of the original sample -- remained in the survey. Since the initial response rate was 94 percent, data on nearly 85 percent of the sample that was initially drawn are available for the current analysis. While these data are among the best available, sample attrition may have reduced the original representativeness, and some caution in generalizing to the entire population is necessary.

In order to produce statistically reliable estimates for black women, households in enumeration districts known to be predominantly black were selected at a rate three times greater than the rate for white enumeration

districts. In 1968, 3638 white women and 1459 black women were interviewed. (Sixty-two young women of other races were interviewed but have been consistently excluded from these analyses because of their diversity.) A sample weight was assigned to each individual case to correct for the fact that different groups of the population had different probabilities of selection. The weights were computed so that the sum of the weights would equal the sample size of 5159.

The NLS data are especially well-suited for a study of the consequences of early childbearing because they follow young women through the teenage and young adult years when family-building typically takes place. For a large proportion of the sample data on marriage and childbearing are not retrospective but are gathered as the events occur. Because extensive information on the educational and work experience as well as the social and economic background of respondents was obtained, detailed comparisons can be made between women who became mothers while teenagers and other young women who postponed their childbearing. Such extensive data are not frequently available for so large or contemporary a sample.

The Michigan Panel Study of Income Dynamics

The Panel Study of Income Dynamics was inaugurated in 1968 to provide information on short run changes in the economic status of families and individuals. To this end, approximately 5000 families have been interviewed annually through 1978. Data obtained through 1976 are included in the current analyses.

The original sample consisted of a cross-section sample of dwelling units within the continental United States plus a subsample of families interviewed in 1967 by the U.S. Bureau of the Census. Since 1968, the sample has consisted of all panel members living in families that were

interviewed the previous year plus newly-formed families that include any adult panel member who had moved out of the sample household since 1968. The addition of newly-formed families has resulted in an increased sample size despite sample attrition.

Panel losses were considerable (24 percent) in the first year but have been relatively minor in recent years. However, the cumulative response rate including initial and subsequent losses, is only 55 percent. The data were weighted in 1972 to adjust both for different sampling fractions and for different rates of nonresponse. Since that time, attrition has not been sufficiently great to warrant further adjustment, and the authors present evidence that estimates made from PSID data correspond closely with estimates obtained from the Current Population Reports (Survey Research Center, 1976, pp. 499-510).

The PSID was explicitly initiated to provide the best possible measures of respondents' family incomes, individual wages, and employment history. The income measures are generally considered to be superior to estimates from the Current Population Survey (Minarik, 1975), and tabular comparisons of both data sets show a high degree of congruence on the weighted distributions of most standard demographic variables (Sawhill et al., 1975). Despite the reassurance that this provides, it seems extremely important to use caution in generalizing from results to the entire United States population.

For the years 1968 to 1975, all information is related to the head of the household. Consequently, little information is available on married women, since they are not defined as heads. Fortunately, in 1976, wives were also interviewed, and detailed information on wives' labor force participation, family background, and earnings was obtained. In addition, wives supplied information on their age at marriage and age at first childbirth, data that

cannot be reliably obtained from some of the interviews held with the husband, who is defined as the head of the household.

Although initial plans called for analyses on all women who turned 24, 30, 36, and 42 during the course of the survey, it soon became clear that a far richer and more complete analysis could be done if emphasis were placed on the sub-set of wives and female heads who were interviewed in 1976. Moreover, the number of women available for analysis was not greatly diminished. Of 2630 wives and female heads aged 16 to 42 in 1968, 156 (6 percent) were not interviewed in 1976. For the 2474 wives and female heads in our sample who were interviewed, there is a wealth of information. The slight loss in sample size seems far outweighed by the additional information available on these women and their experiences.

ANALYTIC STRATEGIES

The basic hypothesis being explored is that a young age at the birth of a first child is directly associated with higher subsequent fertility. In addition, the effect of a premarital birth and a young age at first marriage will also be explored.

Initially, the gross association between age at first birth and fertility will be examined, controlling only for respondent race and socioeconomic status. Then the association between age at first childbirth and the proportion having second and third births will be presented for PSID respondents. In addition, for PSID women proceeding to different parities, the mean interval between parities will be reported.

Following exploration of simple associations we then proceed to multivariate analyses of fertility so that the effects of age at first birth, premarital pregnancy, and age at first marriage, plus appropriate control variables, can be evaluated simultaneously.

An initial multivariate analysis will focus on those NLS women who turn 24 during the years of the survey. Because this strategy catches all the young women at the same age, it partially controls for the enormous life cycle variation in the lives of young women who ranged in age between 14 and 24 in the first year of the survey. Looking at women at age 24 is, of course, not an analysis of completed fertility. It is of clear interest, nevertheless, as an indicator of family well-being among young families.[1] Only those women who turn 24 during the survey are studied, since only for these women is there sufficient information for a multivariate analysis.

1. In related analyses, family size is included as a predictor of the woman's labor force participation and as a determinant of economic well-being, since the number of dependents affects the adequacy of an income.

A similar set of regressions will then be reported for PSID respondents who have ever had children by 1976. Since many of these women in the PSID sample are old enough to have completed their family building--approximately 90 percent of women age 35 having completed childbearing U.S. Census Bureau 1978, Table 17)-- these analyses more nearly approximate a traditional study of completed fertility. In addition to analyses of the entire PSID sample, regressions for women aged 35 to 52 in 1976 have been conducted separately from analyses of women aged 22 to 35. Because of the importance of race to so many life outcomes, separate analyses will also be reported for blacks and whites.

VARIABLES

Measurement of Age at First Birth

Neither the NLS nor the PSID contains a childbearing history for women. Consequently it was necessary to construct such a record for all respondents. The procedure by which this was done for each data set will be described.

The National Longitudinal Survey of Young Women. To develop a measure of the young woman's age at first birth , the household record in 1968 was searched for any sons or daughters of the respondent. The age of the oldest of the respondent's children was subtracted from the respondent's age in 1968 to yield age at first birth. First births which occurred in subsequent survey years were identified by searching the household records of childless respondents. When a first birth was identified, the respondent's age at the last interview was assigned as her age at first birth. Since exact birth dates are not known for either the respondent or her children and age is coded only in full years for respondents and children over three, the measure of age at first birth contains some error. Where some uncertainty existed our decision rule erred by assigning the older age at first birth.

The measure of age at first birth used here does not include children who were given up for adoption shortly after birth, who were stillborn, who died in early childhood, or those who were sent to live outside the respondent's household.[1] Own children of the respondent cannot be distinguished from adopted children. We are, then, in effect, measuring the impact of the age at

1. Although women who reported having children at one point but not at age 18, 21, or 24, when family size measurements were made, were dropped from the NLS sample, their numbers are of interest. Twenty-nine of 1,201 women who reported a child at an earlier age no longer had that child living with them at age 24. Similarly 35 of 909 mothers had "lost" a child by age 21, and 43 of 393 had "lost" a child by age 18. We simply do not know what happened to these children.

which a young woman takes on the duties and responsibilities of motherhood, or becomes a mother in a social sense. The variable used here should be a fairly unbiased measure of sociological, if not of biological, motherhood.

Panel Study of Income Dynamics. The measure of age at first birth was determined differently for wives and for female heads. For the 1701 women in the sample who completed the survey for wives in 1976, the age of her oldest child as reported by the wife was subtracted from the wife's age. No similar information was available for female household heads; consequently the measure of age at first birth for the 773 women who were household heads in 1976 was based on the household record. If a first birth occurred during the survey years, the woman's age in the year of the birth was assigned. Otherwise, the household record for 1968 was searched for the age of the oldest child and this age was subtracted from the woman's own age. Since women in the sample in 1968 could have been as old as 42 in that year, it is possible that some of their children would have grown up and left home. This, of course, would result in an incorrect assignment of age at first birth. This would only be a problem for heads approximately 32 to 42 years of age in 1968--38 percent of the sample of female household heads or 12 percent of the total sample of women. However, the children most likely to be missed are those born to the youngest mothers, since they are most likely to have grown up and left home before their mothers turned 40. Because of this problem analyses are done not just for all women but separately for women under age 35 and age 35 or older: analyses on younger women should not be affected by this problem. Analyses on wives are also unaffected.

Comparison of Age at First Birth Distributions with Current Population Reports

Table 2 presents the weighted proportions of women in the NLS and PSID samples in several age-at-first-birth categories. These distributions can be compared with distributions calculated from data from the 1971 and 1975

Current Population Reports for first births that occurred after the year 1960. The distributions are strikingly similar, although both the NLS and PSID samples have a higher proportion of births among women at older ages. The highest proportion occurs among the total PSID sample, which, as noted above, is probably elevated by the loss of some early births among older family heads. The young women in the NLS and in the young women PSID sub-sample have few first births that occurred as early as 1960. Since the younger the sample, the more likely the women would have participated in the trend toward delayed childbirth (Bureau of the Census, 1978), it seems likely that some of the difference represents true societal changes over time. While the overall correspondence of the NLS and PSID data with Census Bureau data is most encouraging, it should be kept in mind that some inaccuracy due to coding and missing information was unavoidable. As always, our results should be considered within the context of the findings of other researchers, as well as that of the researcher's expectations.

Table 2: The Distribution of Women by their Age at First Birth, 1971 and 1975 Current Population Survey (First Births Occurring After 1960), National Longitudinal Survey and Panel Study of Income Dynamics

Age at First Birth	1971 CPS	1975 CPS	NLS	PSID	
			at age 24	Total	35
≤17	.128	.129	.113	.112	.113
18	.095	.092	.095	.062	.071
19-20	.259	.248	.186	.214	.212
≥21	.518	.530	.607	.633	.605

Other Variables

Because the age of the respondent at her first birth and first marriage must be obtained from household record data, there is some unavoidable inaccuracy inherent in the construction of the variable that measures premarital pregnancy. First births that occur in the same year as first marriages are coded "ambiguous," since it is unclear whether or not conception preceded the marriage.

Other variables used in the analyses are defined in the Appendix. Means, standard deviations, and variable definitions are reported in Appendix Table 1 for NLS respondents. PSID statistics are presented in Appendix Table 2.

RESULTS

The Simple Association Between Age at First Birth and Family Size

Table 3 presents data on the mean number of children that NLS respondents have at ages 18, 21, and 24, depending on the woman's age at the birth of her first child, for the total sample and by race and socioeconomic status. The association between age at first birth and later family size is strong and monotonic; there are no exceptions to the trend among any of the sub-groups. Also, blacks and respondents from lower status family backgrounds seem to have larger family sizes; these tendencies conform to results of other researchers (Bumpass, 1969; Rindfuss, 1975).

Table 4 presents similar results for PSID women, first for the total sample and then separately for younger and for older women, the latter group being the only group likely to have completed childbearing. However, the association between age at first birth and number of children is strong among both age groups. Moreover, the association is again strong among all of the sub-groups stratified on race and socioeconomic background. Overall, among women aged 35 to 52, the youngest mothers average three children more than mothers who began family building after age 23. The association appears to be stronger among white mothers, but small sample sizes undermine this comparison; we will consider this question again later.

Table 5 reports the mean number of children by 18, 21, and 24 among NLS respondents by the timing of the first birth relative to the first marriage. These data suggest that the largest difference in later fertility is between those conceiving premaritally (and thus having either premarital or ambiguously-timed first births) and those having clearly post-marital first births. This trend becomes most pronounced at age 24.

Table 3: Number of Children by Ages 18, 21, and 24 by Respondent's Age at First Birth, by Race, and by Socioeconomic Background (SES). (National Longitudinal Survey)

Age of Respondent at First Birth	Number of Children... ...at age 18		...at age 21		...at age 24	
ALL RACES						
≤15	1.6	(51)	2.6	(34)	3.0	(48)
16–17	1.1	(213)	1.8	(163)	2.6	(167)
18			1.4	(175)	2.1	(179)
19–20			1.1	(353)	1.8	(351)
21–23					1.2	(396)
ALL WHITES						
≤15	1.6	(22)	2.2	(19)	2.8	(32)
16–17	1.0	(157)	1.8	(119)	2.5	(131)
18			1.4	(150)	2.1	(156)
19–20			1.1	(301)	1.8	(310)
21–23					1.2	(362)
Low SES						
≤15	1.7	(10)	2.4	(7)	3.1	(10)
16–17	1.0	(42)	2.0	(41)	2.6	(57)
18			1.6	(39)	2.2	(42)
19–20			1.1	(71)	1.7	(80)
21–23					1.4	(67)
Medium/High SES						
≤15	1.4	(10)	2.3	(7)	2.5	(14)
16–17	1.0	(96)	1.7	(66)	2.4	(62)
18			1.3	(94)	2.0	(94)
19–20			1.1	(196)	1.8	(200)
21–23					1.1	(261)
ALL BLACKS						
≤15	1.6	(29)	3.0	(16)	3.6	(16)
16–17	1.1	(57)	2.0	(43)	2.9	(36)
18			1.6	(24)	2.5	(23)
19–20			1.2	(53)	1.9	(41)
21–23					1.2	(34)
Low SES						
≤15	1.8	(14)	3.1	(7)	3.3	(8)
16–17	1.0	(22)	2.1	(20)	2.8	(21)
18			1.6	(12)	2.6	(13)
19–20			1.2	(25)	2.0	(19)
21–23					1.3	(14)
Medium/High SES						
≤15	1.8	(6)	–	(3)	–	(3)
16–17	1.1	(16)	1.8	(9)	2.5	(6)
18			1.8	(8)	2.3	(8)
19–20			1.2	(20)	1.8	(14)
21–23					1.2	(13)

*: n < 5
–: n = 0

SES measured as the mean of four variables—occupation of head of household, mother's education, father's education, and presence of reading materials in the home of origin. Variables were standardized to have a mean of 10 and a standard deviation of 3. N's in parentheses.

Table 4: Mean Number of Children by Age at First Birth, Race, Parental Socio-Economic Background (PSES) and Age of Woman in 1976[a] (Panel Study of Income Dynamics)

Age of Respondent at First Birth	All Women 22-52 in 1976	Women 22-34 in 1976	Women 35-52 in 1976
ALL RACES			
≤ 15	4.2 (37)	3.1 (18)	5.3 (19)
16-17	4.5 (268)	2.8 (103)	5.5 (164)
18	3.3 (168)	2.5 (77)	4.0 (91)
19-20	3.2 (529)	2.4 (229)	3.9 (300)
21-23	2.9 (585)	2.1 (221)	3.4 (363)
≥ 24	2.3 (655)	1.6 (153)	2.5 (502)
ALL WHITES			
≤ 15	4.2 (24)	2.9 (14)	5.9 (10)
16-17	4.6 (219)	2.6 (74)	5.6 (144)
18	3.2 (137)	2.4 (62)	3.9 (75)
19-20	3.2 (460)	2.4 (197)	3.8 (263)
21-23	2.9 (545)	2.1 (206)	3.3 (338)
≥ 24	2.3 (516)	1.6 (146)	2.6 (370)
Low SES			
≤ 15	5.1 (7)	-- (4)	-- (3)
16-17	3.5 (47)	2.8 (23)	4.3 (24)
18	3.5 (40)	3.1 (15)	3.7 (25)
19-20	3.8 (118)	3.0 (35)	4.2 (82)
21-23	3.3 (141)	2.3 (26)	3.5 (115)
≥ 24	2.4 (124)	1.6 (19)	2.6 (105)
Medium/High PSES			
≤ 15	3.4 (15)	2.7 (10)	4.6 (6)
16-17	4.9 (166)	2.4 (49)	5.9 (116)
18	3.1 (91)	2.2 (45)	4.1 (46)
19-20	3.0 (326)	2.3 (158)	3.7 (167)
21-23	2.7 (393)	2.1 (179)	3.2 (214)
≥ 24	2.3 (380)	1.6 (124)	2.6 (256)
ALL BLACKS			
≤ 15	4.3 (13)	3.6 (4)	4.6 (9)
16-17	4.0 (49)	3.3 (29)	5.1 (20)
18	3.7 (32)	2.7 (15)	4.6 (17)
19-20	3.2 (69)	2.2 (32)	4.0 (37)
21-23	3.2 (40)	1.8 (15)	4.0 (25)
≥ 24	2.2 (139)	1.3 (7)	2.2 (132)
Low SES			
≤ 15	4.0 (7)	-- (3)	-- (5)
16-17	4.0 (25)	3.6 (13)	4.4 (13)
18	3.7 (19)	2.6 (8)	4.5 (11)
19-20	3.7 (27)	2.1 (10)	4.7 (16)
21-23	3.2 (19)	1.7 (6)	4.0 (13)
≥ 24	2.6 (20)	-- (4)	2.9 (16)
Medium/High SES			
≤ 15	-- (4)	-- (1)	-- (3)
16-17	4.1 (23)	3.0 (16)	6.5 (7)
18	3.7 (11)	2.8 (6)	-- (5)
19-20	2.8 (35)	2.2 (17)	3.4 (19)
21-23	2.9 (15)	1.7 (6)	3.7 (9)
≥ 24	2.1 (116)	-- (2)	2.1 (114)

Total Cases = 2242

[a] N's in parentheses; means not shown if base < 5

Table 5: Number of Children by Ages 18, 21, and 24 by Age at First Birth Relative to Age at First Marriage, by Race, and by Socioeconomic Background (SES) (Weighted)

Age at First Birth Relative to Age at First Marriage	Number of Children by...					
	...Age 18		...Age 21		...Age 24	
ALL RACES						
Premarital	1.2	(85)	1.6	(129)	2.3	(163)
Ambiguous	1.1	(98)	1.5	(274)	2.1	(405)
Post-marital	1.1	(76)	1.3	(308)	1.5	(570)
ALL WHITES						
Premarital	1.2	(27)	1.3	(64)	2.1	(97)
Ambiguous	1.1	(80)	1.4	(233)	2.0	(364)
Post-marital	1.1	(70)	1.3	(282)	1.5	(530)
Low SES						
Premarital	1.6	(5)	1.8	(13)	2.2	(31)
Ambiguous	1.1	(22)	1.7	(53)	2.2	(105)
Post-marital	1.1	(22)	1.3	(90)	1.7	(119)
Medium & High SES						
Premarital	1.0	(18)	1.3	(39)	2.1	(56)
Ambiguous	1.1	(53)	1.3	(158)	1.9	(217)
Post-marital	1.1	(36)	1.2	(159)	1.4	(358)
ALL BLACKS						
Premarital	1.3	(59)	1.9	(65)	2.5	(66)
Ambiguous	1.4	(18)	1.6	(41)	2.3	(41)
Post-marital	1.4	(7)	1.5	(27)	1.8	(40)
Low SES						
Premarital	1.3	(24)	2.0	(29)	2.5	(34)
Ambiguous	1.3	(10)	1.7	(19)	2.5	(20)
Post-marital	~	(3)	1.3	(13)	1.9	(17)
Medium & High SES						
Premarital	1.2	(16)	1.6	(18)	2.3	(17)
Ambiguous	1.5	(5)	1.5	(15)	2.1	(13)
Post-marital	~	(1)	1.2	(6)	1.3	(14)

Tables 6 and 7 focus on the fertility of PSID women from a slightly different perspective. In Table 6, the proportion of mothers who have second and third births is reported according to the woman's age when she bore her first child. As one would expect from the tables already presented, women who become mothers at a young age are considerably more likely to have additional children. In fact, among those women who bore their first child while 15 or younger, nearly all had a second birth and the overwhelming majority went on to have a third child as well. (Regrettably, coding problems preclude study of the

Table 6: Percent of Respondents Having at Least One Child Who Have a Second or Third Live Birth, by Age At First Birth and Race (Panel Study of Income Dynamics)

Age at First Birth	Percent Who Have a Second Birth		
	All Women	Whites	Blacks
≤15	93% (71)	100% (21)	90% (50)
16-17	93 (233)	95 (118)	92 (115)
18	91 (175)	92 (103)	90 (72)
19-20	89 (438)	90 (313)	87 (125)
21-23	86 (460)	87 (353)	80 (107)
≥24	67 (246)	66 (203)	70 (43)
	Percent Who Have a Third Birth		
	All Women	Whites	Blacks
≤15	83% (71)	90% (21)	80% (50)
16-17	71 (233)	64 (118)	79 (115)
18	71 (175)	68 (103)	76 (72)
19-20	63 (438)	63 (313)	63 (125)
21-23	52 (460)	49 (353)	63 (107)
≥24	35 (246)	33 (203)	42 (43)

fourth parity.) Among mothers who delayed their first birth until at least age 24, about two-thirds went on to have a second birth and only a third had a third birth. This suggests that the current trend toward delay of the first birth into the late twenties among many American women (U.S. Bureau of the Census, 1978) may have a substantial impact on completed family size. More pertinent to the question of the effects of teenage motherhood, these data make it clear that it is not just a few young mothers who go on to have at least moderate sized families, but the majority of young mothers who have at least three children. Again, the trend is monotonic and virtually without exception.

The string of tables indicating a strong association between fertility and age at first childbirth is interrupted by Table 7. In this analysis of childbearing, age at first birth has no effect.

Table 7 reports the mean number of years between births for those women who have had (in the top half of the table) a first and a second child and (in the bottom half of the table) those who have had a second and a third birth. These numbers are crude, since they could only be produced by subtracting the age of each child from the age of the mother. However, the interval lengths and race differences found with these data correspond to those found in Census Bureau tabulations (U.S. Bureau of the Census, 1978). Moreover, our results correspond to results obtained from the 1970 National Fertility Study (Bumpass et al., 1978), although their data include both open and closed intervals, while Table 7 is based only on intervals closed by a live birth.

In short, the data in Table 7 suggest that age at first childbirth has no effect on childspacing. Women who proceed from one parity to the next seem to have that subsequent birth two to three years after the previous birth, regardless of the woman's age at first childbirth. Perhaps this reflects a

Table 7: Mean Years Between Births Among Women Proceeding to the Next Parity by Age at First Birth and Race (Panel Study of Income Dynamics)

Age at First Birth	All Women	Whites	Blacks
	Years Between First and Second Births		
≤15	2.62 (66)	2.37 (21)	2.48 (45)
16-17	2.93 (217)	3.45 (112)	2.29 (105)
18	2.63 (160)	2.56 (95)	3.20 (65)
19-20	2.72 (391)	2.87 (282)	1.94 (109)
21-23	2.77 (394)	2.85 (308)	1.99 (86)
≥24	2.60 (164)	2.59 (138)	2.36 (30)
	Years Between Second and Third Births		
≤15	2.90 (59)	3.32 (19)	2.19 (40)
16-17	2.71 (166)	2.85 (75)	1.60 (91)
18	3.01 (125)	3.59 (70)	2.81 (55)
19-20	2.93 (276)	3.15 (197)	1.79 (79)
21-23	2.96 (241)	3.20 (174)	2.23 (67)
≥24	2.37 (86)	2.49 (68)	1.59 (18)

societal norm that children should be sufficiently close together to be playmates. If so, a teenage mother might not wish to delay a subsequent birth any more than any other mother. And an older mother might want a repeat pregnancy about as soon as a young mother. If this is the case, societal programs directed at delay of the second birth may meet resistance on the part of young mothers who do not wish to delay family building even if they have not completed high school. In effect, delay of the second birth might require delay of the first. Clearly we need to know more about the motivations underlying the childbearing of teenage mothers. Even though a first pregnancy may have been unintended, the second birth may be very intentional.

The critical difference appears to lie in the tendency of teenage mothers

to continue on to higher parities.[1] Consequently, even if their childspacing intervals approximate those of older women at the same parity, early childbearers appear to end up with substantially larger families. However, we have thus far not controlled for other factors that influence fertility behavior. Do teenage mothers seem to have larger families even when social and demographic factors are controlled?

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1. Other researchers use the term "pace of childbearing" (Bumpass et al., 1978; Trussell and Menken, 1978) to describe the proportion of women who have a birth within a specified duration after the last birth. They find that teenage mothers have more births during an interval than older mothers. Our results, though not duration-specific, also show higher proportions of teenage mothers proceeding to higher parities. It is not clear that "pace" is the word to describe this tendency, though, since neither our results nor those of Bumpass et al., (1978, Table 2) show substantive differences in mean interval length by age at first birth among women proceeding to each parity. It would be useful for policy purposes to have other researchers with more accurate data on the timing of fertility to evaluate interval length by age at first birth among only those women who proceed to a particular parity.

The Association Between Age at First Birth and Family Size Controlling for Other Factors

In Tables 8-11 the initial association between family size and age at first childbirth is tested in multiple regression models including important control variables. In analysis of both the NLS and PSID women, the importance and statistical significance of age at first birth are retained even with the controls. For example, in Table 8, it can be seen that respondents having a first birth at age 15 or younger have an average of 1.25 more children by age 24 than women whose first child was born when they were age 21 to 23. The impact of age at first childbirth is far greater than the effect of age at first marriage. Of course, we do not know how many children these women will end up with when they are done having children, which makes it important to look at the PSID analyses shown in Tables 9 and 10.

In Table 9, four regressions were run on the same sample of PSID women, once without age at first birth or age at first marriage, once with both variables, once with age at marriage only, and once with age at first birth only. These results confirm the NLS analysis in several ways. First, it is clear that age at first childbirth is a critical determinant of family size. Moreover, it again appears to be age at first birth rather than age at first marriage that is the critical factor. Further, in the PSID sample that includes older women, the size of the "Age at First Birth" coefficients is even larger than in the NLS regression. For example, NLS women whose first child was born when they were 15 or younger had 1.25 more children on the average than women who delayed until they were age 21 to 23. PSID women 15 or younger at first childbirth had approximately two children more than women who delayed until they were 21 to 23. This conclusion is strengthened by the data presented in Table 10.

In Table 10, PSID women are divided according to their current age at the

Table 8: Partial Regression Coefficients (Standardized and Unstandardized) Relating the Number of Children at Age 24 on Age at First Birth, Age at First Marriage and Controls for Respondent Background- Mothers Only (National Longitudinal Survey)

Independent Variables	b's	Betas
Age at first birth (dummy variables)		
≤ 15	1.25 ***	.27 ***
16-17	.98 ***	.38 ***
18	.57 ***	.22 ***
19-20	.36 ***	.18 ***
21-23	a	a
Age at first marriage		
≤ 15	.38	.07
16-17	.21	.09
18	.37 ***	.16 ***
19-20	.19 **	.10 **
21-23	a	a
Parental socio-economic status	.01	.03
Farm background at 14 (1 = yes)	.07	.03
Education (years completed) at age 24	-.08 ***	-.16***
Number of siblings	.02*	.05*
Premarital or ambiguous timing of first pregnancy relative to marriage (1 = yes)	.17 ***	.09 **
Ever-divorced or separated by 24	-.13	-.05
Age in 1968	.05 **	.07 **
Southern residence (1 = yes)	-.17 **	-.09 **
Race (1 = white)	-.32 ***	-.12 ***
Constant	1.71	
R^2	.418	
F	36.89	
N	889.	

* p < .05
** p < .01
*** p < .001
a = omitted category

Table 9: Partial Regression Coefficients (Standardized and Unstandardized) of Number of Children on Family Background, With and Without Age at First Birth and Age at First Marriage (Panel Study of Income Dynamics) Mothers Only

Independent Variables	Without Age at First Birth or Age at First Marriage		With Age at First Marriage Only		With Age at First Birth Only		With Age at First Birth and with Age at First Marriage	
	b	beta	b	beta	b	beta	b	beta
Age at First Birth								
≤15	-	-	-	-	2.548***	.185***	2.829***	.205***
16-17	-	-	-	-	2.296***	.424***	2.448***	.452***
18	-	-	-	-	1.377***	.207***	1.494***	.224***
19-20	-	-	-	-	1.215***	.294***	1.292***	.312***
21-23	-	-	-	-	.803***	.201***	.834***	.209***
≥24	-	-	-	-	a	a	a	a
Age at Marriage								
≤15	-	-	1.470***	.157***	-	-	- .411	-.044
16-17	-	-	1.509***	.344***	-	-	- .092	-.021
18	-	-	1.042***	.210***	-	-	- .028	-.006
19-20	-	-	.764***	.193***	-	-	- .036	-.009
21-23	-	-	.414***	.102**	-	-	- .100	.025
≥24	-	-	a	a	-	-	a	a
Religiosity (1 = greatest 4 = least)	-.022	-.016	- .043	-.030	- .044	-.031	-.044	-.031
Race (1 = whites)	-.218	-.045	-.331**	-.068**	-.278*	-.057*	-.237*	-.048*
Religion (1 = Catholic)	.681***	.174***	.701***	.179***	.560***	.143***	.540***	.138***
First Birth Premarital	-.007	-.001	.603***	.082***	-.377*	-.051*	-.463*	-.063*
Parental Socio-Economic Status	-.013	-.016	-.010	-.012	.004	-.005	-.005	-.006
Farm Background (1 = farm)	.083	.020	.060	.014	.067	.016	.069	.016
Southern Background (1 = south)	- .417***	- .111***	-.473***	-.126***	.434***	-.116***	-.416***	-.111***
Number of Siblings	.048**	.065**	.055**	.075**	.070***	.096***	.071***	.097***
Age in 1976	.067***	.283***	.078***	.330***	.090***	.382***	.091***	.382***
Education: < 12 years	1.220***	.311***	.687***	.175***	.417***	.106***	.449***	.114***
= 12 years	.118	.034	-.039	-.011	.085	-.024	-.081	-.023
> 12 years	a	a	a	a	a	a	a	a
Employed early in marriage (1 = yes)	- .239**	- .064**	-.114-	-.030	.042	.011	.029	.008
Constant	.389		- .642		- 1.283		- 1.346	
F	47.651		42.949		59.061		45.861	
R^2	.258		.309		.380		.382	
N	1658		1658		1658		1658	

* = p < .05
** = p < .01
*** = p < .001

a = omitted category
- = omitted from regression

time of the 1976 interview. The coefficients for the younger women are similar to those for the young NLS women, while the coefficients for the older women are considerably larger. Women 35 to 52 who bore their first child at age 15 or younger have families that are larger by more than two children, on the average, compared to women who delayed childbearing until age 21 to 23. Compared to women who delayed to age 24 or later, families of the youngest mothers are larger by more than three children, even after numerous other factors are controlled. It certainly does not appear that early childbearers simply acquire an early lead that they subsequently lose as later-bearing women complete their families.

Not only are the magnitudes of the "Age at First Birth" coefficients large, but the variable makes a substantial contribution to the variance explained (see Table 9). When added to the basic equation (without age at first birth or age at first marriage) that age at first birth variable increases the R^2 by .122 (from .258 to .380), which represents nearly a fifty percent improvement in the variance explained by the equation. In comparison, the "Age at Marriage" variable, even when added alone, produces an improvement of only .051 in the R^2, a 20 percent improvement. When "Age at First Birth" is already in the equation, the addition of "Age at Marriage" adds essentially nothing to the R^2, nor are the coefficients for "Age at Marriage" statistically significant.

In Table 11, the association between age at first childbirth and later family size is examined separately for blacks and whites. It appears from this analysis that an early birth has less impact on the family size of black women. This is not because of less variation in family size among blacks (Blacks: mean number of children = 2.98; standard deviation = 1.94. Whites: mean = 3.04; standard deviation = 1.72).

Table 10: Partial Regression Coefficients (Standardized and Unstandardized) of Number of Children on Family Background, Demographic Characteristics, and Age at First Birth, for Women 22-34 and 35-52 (Panel Study of Income Dynamics)

Independent Variables	Respondents Aged 22-34		Respondents Aged 35-52	
	b	beta	b	beta
Age at First Birth				
≤15	1.540***	.214***	3.110***	.186***
16-17	1.140***	.355***	2.681***	.450***
18	.939***	.258***	1.573***	.203***
19-20	.865***	.365***	1.275***	.273***
21-23	.618***	.258***	.818***	.188***
≥24	a	a	a	a
Religiosity (1 = Greatest, 4 = Least)	- .021	- .024	- .052	- .034
Race (1 = White)	- .249	- .078	- .369*	- .072*
Religion (1 = Catholic)	.122	.048	.658***	.160***
First Birth Premarital	- .064	- .018	- .387	- .039
Parental Socioeconomic Status	- .013	- .028	- .006	- .007
Farm Background (1 = Farm)	.062	.023	.095	.021
Southern Background (1 = South)	- .209*	- .092*	- .539***	- .133***
Number of Siblings	.024	.050	.073**	.094**
Age in 1976	.128***	.358***	.061***	.149***
Education				
<12 years	.328*	.126*	.336	.082
=12 years	- .062	- .029	- .089	- .023
>12 years	a	a	a	a
Employed Early in Marriage (1 = Yes)	- .115	- .050	- .091	- .022
Constant	- 1.820		.129	
F_2	14.100		30.44	
R^2	.258		.337	
N	619.		1,036.	

* = p < .05
** = p < .01
*** = p < .001

a = omitted category

Table 11 : Partial Regression Coefficients (Standardized and Unstandardized) of Number of Children on Family Background, Demographic Characteristics, and Age at First Birth, by Race (Panel Study of Income Dynamics)

	Blacks		Whites	
Independent Variables	b	beta	b	beta
Age at First Birth				
≤15	1.811**	.179**	2.712***	.176***
16-17	1.763***	.319***	2.351***	.436***
18	1.589***	.237***	1.276***	.192***
19-20	.926*	.192*	1.208***	.301***
21-23	.828	.137	.755***	.199***
≥24	a	a	a	a
Religiosity (1 = Greatest, 4 = Least)	- .139	- .076	- .041	- .030
Religion (1 = Catholic)	.038	.004	.536***	.145***
First Birth Premarital	- .165	- .034	- .394	- .042
Parental Socioeconomic Status	.019	.018	- .004	- .006
Farm Background (1 = Farm)	.451	.090	- .034	- .008
Southern Background (1 = South)	- .184	- .039	- .461***	- .115***
Number of Siblings	.055	.063	.079***	.103***
Age in 1976	.102***	.357***	.089***	.387***
Education				
<12 years	.472	.113	.354**	.091**
=12 years	- .122	- .031	- .059	- .017
>12 years	a	a	a	a
Employed Early in Marriage (1 = Yes)	- .813*	- .188*	.116	.032
Constant	- 1.170		- 1.518	
F	7.880		47.580	
R^2	.381		.394	
N	222.		1,434.	

* = p < .05
** = p < .01
*** = p < .001

a = omitted category

As in the case of education (Moore et al., 1978), an early birth simply seems t have a stronger impact on the life of the young white mother than it does on the young black mother. Nevertheless, although the coefficients are smaller for black mothers than for white mothers, the age at first childbirth variable is an important predictor of ultimate family size among both groups. The only other predictors of family size that approach age at first birth in magnitude among black women are being employed in the early years of marriage and age cohort. The effect of the woman's age is particularly dramatic, each decade of age difference being associated with a family size difference of one child. This difference in part reflects incomplete families among younger women of course, but it presumably also reflects the recent secular decline in fertility. The measure of employment early in marriage is intriguing because the significance of this variable disappeared for all other sub-groups when age at first birth was included in the regression. Since 72 percent of the black women in our sample did work early in marriage, those who were not employed appear to be an interesting high fertility sub-group worthy of further analysis.

The Impact of Other Variables

Although the list of variables in our analyses is not a long one, the variance explained is substantial, running in the 40 percent range, though the R^2 dips to .285 for the young PSID women. Moreover, the results are fairly consistent across analyses.

In every analysis, the measure of parental socio-economic status is unrelated to family size. However, whites consistently have smaller families than blacks.[1] Better educated women also tend to have smaller families, although this association is not statistically significant among black women and only borders on significance among older women. Among young women and white women the effect is substantial. The effect of education here is, of course, over and above the effect of age at first birth itself. This suggests that an early birth has an indirect effect on family size through its negative effect on education, in addition to its direct effect.[2]

Having a farm background is consistently unrelated to family size; however being from the South tends to be associated with lower fertility among whites, net of other factors. Coming from a large family also predicts to having a relatively large family, at least among whites. Number of siblings exerts a weak influence on the family size of the young NLS women, but not the PSID

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1. Although the mean family size of black and white women in the PSID sample is virtually the same, there is a significant race coefficient in the family size regression denoting smaller family sizes for whites. This is due to the age distribution of PSID women. The black sample contains a higher proportion of young women than the white sample does, and young women are, of course, less likely to have completed childbearing. When respondent age is statistically controlled, the coefficient for race becomes significant.

2. This hypothesis is explicitly tested with path analytic techniques in Hofferth and Moore, 1978.

young women. It is primarily among the women over age 35 that the woman's own family size is associated with a larger family of procreation.

The impact of religion on fertility is an interesting issue, one that cannot be approached using the NLS data. However, the PSID data include measures of both religiosity as measured by church attendance and of religious affiliation. The frequency of church attendance is consistently unrelated to family size among all of the PSID sub-groups, presumably because faithfulness does not imply adherence to any particular norm regarding family size. However, white women who identify themselves as Catholic tend to have larger families, a trend most notable among older women. This is in line with other evidence documenting a recent convergence in the contraceptive practices of Catholics and non-Catholics (Westoff and Jones, 1977).

Also in line with evidence documenting dramatic declines in the fertility of American women during recent years is the significant coefficient for the age of the woman in every sub-group analyzed. Even in the regressions conducted among women stratified on the basis of their age, there is still an impact of age cohort. The age cohort coefficient is considerably larger for young women compared to older women, but approximately equal for blacks and whites.

Two other variables were only available for inclusion in analyses on one of the data sets. Whether the respondent had even been divorced could be determined with a fair degree of accuracy for NLS women. It was expected that women exposed to a period of non-marriage would have lower fertility; however, no statistical support for this hypothesis was found.

Another variable, included only in the PSID interview, measures whether women worked during the early years of their marriage. As the first column of Table 9 shows, this variable has a significant impact on family size. However, when age at first birth and age at first marriage are also entered into the equation, it becomes clear that employment early in marriage is strongly

correlated to the age at which a woman marries or bears her first child. When these variables are included in the regression, employment early in marriage has no further impact on family size, with one exception. As noted, when black women were analyzed separately (see Table 11), those black women who had been employed early in their marriages were found to have families smaller by nearly one child. This is particularly significant in view of the fact that so few predictors to the family size of black women were found to be significant (only education, age at first birth, and whether the woman worked early in marriage). Perhaps that minority of black women not finding it essential work after marriage tend to have particularly large families.

In the NLS analysis, premarital timing of the first birth did not have a significant association with fertility by age 24. However, women having either a premarital or ambiguously timed first birth (before or in the same year as the marriage) had slightly larger families by the age of 24. PSID analyses, on the other hand, indicate that a premarital first birth is associated with significantly lower subsequent fertility. The effect is small and non-significant among the younger women in Table 10; but it is substantial, if non-significant, among the older women. It is possible that the impact of a premarital birth has changed over time; however, unavoidable coding inaccuracies may also have undermined the accuracy of these measures. It does not seem though, that the degree of inaccuracy is sufficient to account for the dramatic difference in the explanatory power of the age at first birth coefficient relative to the premarital timing variable. With our data, we cannot rule out timing of the first birth as a potentially important variable, particularly when other research suggests that it does affect subsequent fertility (Bumpass et al., 1978). However, the relative importance of timing versus age at first birth in these analyses does seem clear. Age at first childbirth seems to be a critical determinant of fertility, while age at marriage and premarital timing seem to be far less important determinants.

SUMMARY AND CONCLUSIONS

Women who initiate childbearing early have many fecund years left for additional childbearing. In addition, the low contraceptive effectiveness characteristic of most teenage mothers may contribute to subsequent unplanned births. Moreover, early motherhood may restrict their awareness of alternatives to further childbearing. To the extent that an early birth interferes with her education, the young mother has restricted the range of opportunities available to her to relatively unattractive and poorly paid jobs. This may lead her to center her energies on motherhood. For these reasons, teenage mothers were hypothesized to have higher fertility than women who initiated childbearing at a later age.

Analyses provide strong support for an association between an early first birth and higher subsequent fertility. Among young mothers at age 24, those who were 15 or younger at their first birth have an average of 1.25 more children than women who initiated childbearing at age 21 to 23. With families of two to three children on the average, these young families are exposed to serious financial and emotional strains at a time when many young persons are just establishing careers and families. Furthermore, the head start these teenage mothers have in family building does not seem to diminish over time. Among a different sample of women aged 35 to 52, mothers aged 15 or younger at their first birth have an average of 3 children more than women who were at least 24 when they became mothers, even when the effects of numerous social and demographic factors are statistically controlled. Women whose first child was born when they were 16 or 17 have an average of 2.7 more children than women who delayed childbearing to age 24, net of other factors. Overall, among women 35 to 52, those mothers who had their first child at age 17 or

younger have an average of more than five children each.

Previous work has addressed age at first marriage as a determinant of subsequent childbearing. Given trends toward premarital sex along with delays in childbearing after marriage, it was hypothesized that age at first childbirth would be a better predictor of fertility than age at first marriage. In fact, the magnitude and statistical significance of age at first birth by far exceeds that of age at first marriage in these analyses. Moreover, in multivariate analyses, a premarital first pregnancy or birth was not found to have a strong or consistent effect on fertility. In general, family size was found to be smaller among white women, better educated women, non-Catholics, and women from more recent birth cohorts. Southern white women were found to have smaller families; however farm background was not found to affect fertility. Black women who worked early in marriage had smaller families than those who were not employed; however employment early in marriage did not affect the fertility of white women once age at first birth and age at marriage were considered. Older women and white women from larger families tended to have larger families themselves. Socioeconomic background and the frequency of church attendance were not found to affect fertility.

Although teenage mothers seem to have considerably larger families than women who delay childbearing into their twenties, some evidence was found to suggest that the pattern of childspacing does not vary according to age at first childbirth when teenage mothers are compared with other women at the same parity. In general, mothers tend to space births two to three years apart, regardless of their age at first childbirth.

In sum, initiation of parenthood during the teen years seems to be associated with considerably larger families later in life. Given the high cost of rearing children to adulthood, teenage mothers face heavy economic

demands over a long period of time. The limited earning ability of parents who have often not themselves completed high school or established themselves in a job makes poverty a likely outcome. Thus, whatever difficulties the child of a teenager faces as it begins life, it appears that those difficulties are likely to be shared, and probably compounded, by the arrival of several siblings.

Appendix Table 1: Means and Standard Deviations for all Variables Used in Analysis of Number of Children by Age 24 (National Longitudinal Survey)

Independent Variables	Definitions	Mean	Stand. Devia
Number of Children	Number of own children living with respondent	1.808	.9
Age at First Birth	Respondent's age at first birth, in years		
≤15		.042	.2
16-17		.147	.3
18		.157	.3
19-20		.307	.4
21-23		.347	.4
Age at First Marriage	Respondent's age at first marriage, in years		
≤15		.030	.1
16-17		.193	.3
18		.219	.4
19-20		.359	.4
21-23		.194	.3
≥24		.027	.1
Premarital Timing	Timing of first birth relative to first marriage (1=before marriage)	.143	.3
Premarital or Ambiguous Timing	Timing of first birth relative to first marriage (1=before or in same year)	.499	.5
Education	Number of years of schooling respondent has completed	11.758	1.9
Number of Siblings	Number of respondent's siblings	3.163	2.3
Parental Socioeconomic Status	A 3-variable index: occupation of head of household when respondent 14, mother's education, father's education. Standardized to have a mean of 10 and a standard deviation of 3. α = .774.	9.974	2.2
Age in 1968	Respondent's age in years in 1968	22.038	1.4
South	Respondent's region of residence in 1968	.338	.4
Farm Background	Farm residence at age 14	.145	.3
Race	Respondent's race: whites and blacks only	.869	.3

Appendix Table 2: Variables, Definitions, Means and Standard Deviations for Family Size Analyses (Panel Study of Income Dynamics)

Independent Variables	Definitions	Total Sample		Whites		Blacks	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Number of Children	Number of Children Raised by Respondent	3.033	1.756	3.042	1.720	2.985	1.942
Age at First Birth	Respondent's Age at the Birth of Her First Child: Dummy Variables (1 = Yes)						
≤15		.016	.127	.013	.111	.038	.191
16-17		.120	.324	.115	.319	.144	.352
18		.075	.264	.072	.259	.093	.290
19-20		.236	.425	.242	.428	.202	.402
21-23		.261	.439	.287	.452	.117	.322
≥24		.292	.455	.272	.445	.407	.492
Age at First Marriage	Respondent's Age at First Marriage: Dummy Variables (1 = Yes)						
≤15		.037	.188	.037	.190	.032	.177
16-17		.200	.400	.208	.406	.156	.363
18		.147	.354	.158	.365	.077	.266
19-20		.269	.444	.284	.451	.180	.385
21-23		.251	.434	.224	.417	.412	.493
≥24		.096	.295	.088	.283	.144	.352
Age in 1976	Respondent's Age in 1976 in Years	37.597	7.402	37.685	7.499	37.113	6.831
Early Job	Whether Respondent employed in Early Years of Marriage (1 = Employed)	.678	.467	.672	.470	.722	.449
Education < 12 years	Respondent's Education in Years in 1976: Dummy Variables (1 = Yes)	.276	.447	.269	.444	.311	.464
= 12 years		.493	.500	.479	.500	.571	.496
> 12 years		.231	.422	.252	.434	.118	.323
Farm Background	Respondent was asked, "Where Did You Grow Up?" (1 = Farm)	.221	.414	.227	.419	.185	.389
Number of Siblings	Number of Respondent's Siblings	3.859	2.391	3.501	2.251	5.703	2.239
Parental Socio-Economic Status	An index composed of three variables—occupation of head of household when respondent was fourteen, mother's education and father's education—standardized to have a mean of ten and a standard deviation of three.	10.380	2.280	10.490	2.330	9.725	1.824
Race	Race of Respondent (1 = White, 0 = Black) The small number of non-white/non-blacks are excluded from the analysis	1.153	.360	1.000		1.000	
Religion	Respondent's Religion (1 = Catholic, 0 = Other)	.278	.448	.320	.467	.046	.210
Religiosity Scale	Respondent was asked, "How Often Do You Go to Church?" (1 = Most Frequent)	2.331	1.242	2.419	1.256	1.871	1.059
Southern Background	Respondent was asked, "Where Did You Grow up?" (1 = South)	.326	.469	.244	.429	.785	.411
Timing of First Birth: Premarital	Timing of First Birth Relative to First Marriage (1 = Premarital)	.060	.238	.035	.184	.208	.406

REFERENCES

Bauman, Karl and J. Richard Udry
1973 "The Difference in Unwanted Births Between Blacks and Whites." Demography 10 (August): 315-328.

Bonham, Gordon and Paul Placek
1975 "The Impact of Social and Demographic, Maternal Health and Infant Health Factors on Expected Family Size: Preliminary Findings from the 1973 National Survey of Family Growth and the 1972 National Natality Survey." Presented at the Population Association of America. Presented at the Population Association of America.

Brown, Lawrence L., III
1976 "The Measure of Poverty: Characteristics of Low-Income Populations under Alternative Poverty Definitions." Technical Paper XVIII. Washington; U.S. Department of HEW.

Bumpass, Larry, Ronald Rindfuss, and Richard Janosik
1978 "Age and Marital Status at First Birth and the Pace of Subsequent Fertility." Demography 15 (February): 75-86.

Bumpass, Larry
1969 "Age at Marriage as a Variable in Socio-Economic Differentials in Fertility." Demography 6 (February): 45-54.

Ehrlich, Paul and Ann Ehrlich
1970 Population, Resources, and Environment. San Francisco: W. H. Freeman.

Furstenberg, Frank F., Jr.
1976 "Premarital Pregnancy and Marital Instability." Journal of Social Issues 34 (Winter): 67-86.

Hofferth, Sandra and Kristin Moore
1978 The Consequences of Age at First Childbirth: Causal Models. Washington, D.C.: The Urban Institute, Working Paper 1146-06.

Hudis, Paula
1976 "Commitment to Work and to Family: Marital Status Differences in Women's Earnings." Journal of Marriage and Family 38 (May): 267-278.

Janowitz, Barbara S.
1976 "An Analysis of the Impact of Education on Family Size." Demography 13 (May): 189-198.

Johnson, Nan E. and Stokes, C. Shannon
1976 "Family Size in Successive Generations: The Effects of Birth Order, Intergeneration Change in Lifestyle, and Familial Satisfaction." Demography 13 (May): 175-188.

Kantner, John and Melvin Zelnik
1973 "Contraception and Pregnancy: Experience of Young Unmarried Women in the U.S." Family Planning Perspectives 5 (Winter).

Kim, Mo-Im, R. Rider, P. Harper, and J. Yang
1974 "Age at Marriage, Family Planning Practices, and Other Variables as Correlates of Fertility in Korea." Demography 4 (November): 641-656.

Mason, Karen
1974 Women's Labor Force Participation and Fertility. Research Triangle Park, N.C.: Research Triangle Institute.

Michael, Robert T.
1974 "Education and the Derived Demand for Children." In Economics of the Family: Marriage, Children, and Human Capital, ed. T. W. Schultz. Chicago: University of Chicago Press.

Minarik, Jacob
1974 Schooling, Experience, and Earnings. N.Y.: Columbia University Press.

Moore, Kristin, Linda Waite, Steven Caldwell, and Sandra Hofferth.
1978 The Consequences of Age at First Childbirth: Education." Washington, D.C.: The Urban Institute, Working Paper 1146-01.

Moore, Kristin A. and Steven B. Caldwell
1977 "The Effect of Government Policies on Out-of-Wedlock: Sex and Pregnancy. Washington, D.C.: The Urban Institute.

National Center for Health Statistics
1978 Monthly Vital Statistics Report - Final Natality Statistic, 1976. Washington, D.C. Department of Health, Education and Welfare.

Presser, Harriet B.
1971 "The Timing of the First Birth, Female Roles and Black Fertility." Milbank Memorial Quarterly 49 (July): 329-361.

Rindfuss, Ronald R.
1975 "Minority Status and Recent Fertility Trends." Working Paper 75-21, Madison: Center for Demography and Ecology, University of Wisconsin.

Ryder, Norman B. and Charles F. Westoff
1971 Reproduction in the United States 1965. Princeton, N.J.: Princeton University Press.

Sawhill, Isabel V., et al.
1975 Income Transfers and Family Structure. Washington, D.C.: The Urban Institute.

Smith-Lovin, Lynn and Ann Tickamyer
1978 "Nonrecursive Models of Labor Force Participation, Fertility Behavior, and Sex Role Attitudes." American Sociological Review, 43 (August):541-57.

Survey Research Center
1976 Procedures and Tapes Codes - 1976 Interviewing Year. Ann Arbor, Michigan: Institute for Social Research. Pp. 499-510.

Sweet, James
1968 Family Composition and the Labor Force Activity of Married Women in The U.S. Unpublished Ph.D. Dissertation, Ann Arbor: Michigan.

Trussell, James and Jane Menken
1978 "Early Childbearing and Subsequent Fertility." Family Planning Perspective, 10 (July/August): 209-218.

U.S. Census Bureau
1978 "Trends in Childspacing: June 1975" Current Population Reports, Series P-20, No. 315. Washington, D.C. Government Printing Office.

U.S. Census Bureau
1975 "Population Characteristics, Fertility Expectations of American Women: June 1974." Series P-20, No. 277, Washington, D.C.: Government Printing Office.

Waite, Linda and Kristin Moore
1978 "The Impact of an Early First Birth on Young Women's Educational Attainment." Social Forces, 56. (March): 845-865.

Waite, Linda and Ross M. Stolzenberg
1976 "Intended Childbearing and Labor Force Participation of Young Women: Insights from Nonrecursive Models." American Sociological Review 41 (April): 235-252.

Weller, Robert H.
1976 "Changes in the Wantedness Status of Legitimate Births in the United States: 1968, 1969, and 1972." Paper presented at annual meetings of the Population Association of America.

Weller, Robert H. 19
1977 "Wife's Employment and Cumulative Family Size in the United States, 1970 and 1960." Demography 14 (February): 43-66.

Westoff, Charles and Elise Jones
1977 "The Secularization of U.S. Catholic Birth Control Practices." Family Planning Perspectives 9 (September/October): 103-206.

Westoff, Charles
1976 "The Decline of Unplanned Births in the United States." Science 191 (January): 38-41.

Westoff, Charles
1975 "The Yield of the Imperfect: The 1970 National Fertility Study." Demography 12 (November): 573-580.

Westoff, Charles et al. 1961.
1961 Family Growth in Metropolitan America. Princeton, N.J.: Princeton University Press.

Whelpton, P. K., A.A. Campbell, and J. Patterson
1966 Fertility and Family Planning in the U.S. Princeton, N.J.: Princeton University Press.

Whelpton, P.K. and C.V. Kiser
1946-1958 Social and Psychological Factors Affecting Fertility (5 volumes). New York: Milbank Memorial Fund.

Zajonc, R.B.
1976 "Family Configuration and Intelligence." Science 192 (April): 227-236.

Zelnik, Melvin and John Kantner
1977 "Sexual and Contraceptive Experience of Young Unmarried Women in the United States, 1976 and 1971." Family Planning Perspectives 9 (March/April): 55-71.