SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

XXXIII. SUMMARY OF CHIEF FINDINGS AND IMPLICATIONS FOR FUTURE STUDIES[1]

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THIS is the last of a series of analytical articles that have been published in the Milbank Memorial Fund *Quarterly* under the general title "Social and Psychological Factors Affecting Fertility." (1–33) These articles have been reprinted and brought together in five volumes. (34–38). In addition, several special and summary articles on the Indianapolis Study have been published in other journals, and in books and proceedings during the past few years. (39–48) Extensive excerpts from two of the summary articles[2] and brief excerpts from some of the analytical articles, are used in this final article of the Study series.

I. PURPOSE, SCOPE AND METHODS OF THE STUDY[3]

The purpose, scope, and methods of the Indianapolis Study have been described in published articles. (4, 5) Briefly stated, two types of situations, existing during the late thirties, prompted the study. One was the generally low level of birth rates of the period, especially in cities. It was believed that further knowledge of the social and psychological factors affecting fertility would be needed if this country were ever to attempt any form of legislation designed to encourage larger

[1] This is the thirty-third of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton.

[2] The two articles from which extensive excerpts are drawn were published in *Population Studies* (41) and Proceedings of the World Population Conference, 1954. (46) Permission to reproduce the first mentioned article in whole or in part in the final paper of the Indianapolis Study series was granted by the editor of *Population Studies* in a letter dated March 10, 1953. The excerpts include minor departures from the original in spelling and in the use of side heads and footnotes.

[3] From *Population Studies*, November, 1953, vii, No. 2, pp. 95–96.

families. The other situation was the existing status of research in differential fertility. Previous studies of data of the census type had indicated the relation of fertility to such factors as region, rural-urban residence, color, nativity, occupation, education, and other measures of socio-economic status. These had been followed by a series of studies which indicated that the observed group differences in fertility had arisen almost altogether from group differences in age at marriage and in prevalence and effectiveness of contraceptive practice rather than from group differences in fecundity—the physiological capacity to reproduce. It was realized, however, that contraception is only the *means* of family limitation, and that the next step might well be that of trying to investigate the social and psychological factors affecting resort to contraception and the size of the planned family.

The development of methodology in the field was regarded from the beginning as an important purpose of the study. This, rather than the probability of securing much in the way of definitive results, was emphasized in seeking financial support for the study.

The specific aims and scope of the study developed with the discussion and field experimentation which went on over a period of two years during 1938–40. They were finally set by the decision to try to test twenty-three hypotheses concerning the relation of fertility planning and size of planned family to given social and psychological factors. Altogether, six separate schedules and questionnaires were developed, which provided for upward of 1,000 specific items of information, most of them being pertinent to one or more of the twenty-three hypotheses.

The study was conducted in Indianapolis in 1941. Data for testing the hypotheses were obtained from an adjusted sample of 1,444 'relatively fecund' couples with the following characteristics: husband and wife native white, both Protestant, both finished at least the eighth grade, married during 1927–1929, neither previously married, husband under 40 and wife under 30 at marriage, and residents in a large city most of the time since marriage. Couples with these characteristics were located by means of a preliminary Household Survey of virtually all white households in Indianapolis.

II. Chief Findings of the Study

The facts of chief significance that were learned from the Indianapolis Study are discussed briefly under three headings: (A) Household Survey data on religion and fertility; (B) contraception, fecundity, and fertility, and (C) hypotheses on the relation of social and psychological factors to fertility planning status and size of planned family. It will be noted that one cannot find data on any of these three topics in reports of the United States census of population. Except in a recent sample survey[4] the Census Bureau has collected information regarding religion only in the census of religious organizations. It has never asked questions regarding contraception, attitudes, or psychological characteristics.

A. *Household Survey Data on Religion and Fertility*

Of the 41,498 native-white unbroken first marriages with wives 15–44 years of age in the Indianapolis Household Survey, 80 per cent were Protestant unions, 10.8 per cent were Catholic unions, 5.8 per cent were Protestant-Catholic mixed marriages, 1 per cent were Jewish unions, and 2.3 per cent were of other or unknown combinations. The fertility rates were highest for the Catholic couples and lowest for the Jewish. The fertility rate standardized for age was about 18 per cent higher for Catholics than for Protestants. It was about 25 per cent lower for Jews than for Protestants.

The fertility rate was relatively low for Protestant-Catholic mixed marriages. These marriages were about 10 per cent less fertile than Protestant unions and 23 per cent less fertile than Catholic unions. However, they were about 21 per cent more fertile than Jewish unions.

Nearly three-fifths of the Protestant-Catholic mixed marriages involved Catholic wives and two-fifths involved Protestant wives. However, the fertility rates for these two subdivisions were virtually the same.

[4] United States Bureau of the Census: Religion Reported by the Civilian Population of the United States: March, 1957. *Current Population Reports: Population Characteristics.* Series P-20, No. 79. February 2, 1958, 8 pp.

The higher fertility rate for the Catholic than for the Protestant unions persisted at each level of education and rental value of the dwelling unit, except possibly at the lowest rental-value levels. The range of the variations in fertility was wider, and the inter-class differences in fertility by rental value of the home were sharper, for the Protestant unions than for the Catholic unions. Nevertheless, the general pattern of variation was much the same for the two religions. Among both groups fertility was inversely related to rental value of the home except in the top rental-value levels where the relationship became direct. (1, 34)

B. *Contraception, Fecundity and Fertility*

Virtually all of the 1,444 "relatively fecund" couples reported some experience with contraception. The proportions were 98 per cent for the 1,444 "relatively fecund" couples, and 64 per cent for the 533 "relatively sterile" couples.[5]

About 70 per cent of the "relatively fecund" couples began contraception before the first pregnancy and an additional 21 per cent began before the second pregnancy. Over one-fourth (28 per cent) of the "relatively fecund" couples were classified as "number and spacing of pregnancies planned" in that (a) they had planned *all* of their pregnancies by stopping contraception in order to conceive or (b) they had practiced contraception regularly since marriage, and, presumably in consequence, had no pregnancy. An additional 14 per cent of the couples were classified as "number planned" in that they planned the last pregnancy in the manner described above but had one or more previous pregnancies under other circum-

[5] All couples reporting four or more live births were classified as "relatively fecund" regardless of other circumstances. Couples with three or fewer live births were classified as "relatively fecund" unless they knew or had good reasons for believing that conception was physiologically impossible during a period of at least 24 or 36 consecutive months since marriage (24 for never-pregnant couples, 36 for others). Failure to conceive when contraception was not practiced "always" or "usually" during periods of the above durations was considered good reason for such belief. Couples not classified as "relatively fecund" were considered "relatively sterile." There were 533 of them in the adjusted sample and they were not asked to supply the information needed for testing the hypotheses.

stances. Thus some 42 per cent of the "relatively fecund" couples were "planned families" as defined in the Study ("number and spacing planned" and "number planned" combined). The proportion of "planned families" in the group was enhanced intentionally by the restriction of the sample to native-white Protestant couples of at least complete grade-school education, and residents of Indianapolis or another large city most of the time since marriage.

As indicated above, a high proportion of the couples were "relatively sterile" according to the criteria that were used. Over one-fourth (27 per cent or 533) of the 1,977 couples were classified as relatively sterile. This proportion was not found to vary systematically by socio-economic status.

An attempt was made to estimate the relative influence of impaired fecundity and deliberate family limitation in reducing the fertility of the 1,977 couples below the "biological potential." ". . . High, medium, and low estimates of *normal* fecundity are obtained by utilizing, respectively, the experience of the most fecund 60 per cent, 75 per cent, and 85 per cent of the couples." (8, p. 219 or 34, p. 340) ". . . The medium estimate of the normal reproductive ability of the couples in this study during the twelve to fifteen years since marriage is a birth rate of 6,325 per 1,000. Impairments would have lowered this rate to 4,594 (a reduction of 27.4 per cent) if no control measures had been used. If all couples had been normal (or above) in fecundity, contraception and abortion would have caused the birth rate to be 2,074, or 67.2 per cent below the estimated normal capacity. Actually, because of impairments and deliberate control, the birth rate was 1,699, or 73.1 per cent below capacity. In other words, partly because of defects in the reproductive system, but primarily because of contraception and illegal abortion, the number of births to couples studied was only 26.9 per cent of the number that could have occurred if all of the couples had been normal (or above) in fecundity." (8, pp. 212–213 or 34, pp. 333–334.)

The *use and effectiveness of specific methods of contracep-*

tion was described by Westoff, Herrera, and Whelpton as follows:

> Condom and some kind of douche used separately or together account for approximately 72 per cent of all exposure with contraception for the total group studied. Diaphragm and jelly, which accounts for about 7 per cent of all contraceptive exposure, tends to be used later in the marriage period than condom and douche. There is a definite increase in the use of more effective methods over the marriage period, although over 35 per cent of the couples were using comparatively ineffective methods after 12 to 15 years of marriage.
>
> The belief that a method offered 'reliability' is the chief reason for using a method and for changing from one method to another.
>
> For 'relatively fecund' couples using contraception 'always,' contraception in general is 92 per cent effective from the point of view of the reduction in uncontrolled fertility.
>
> Individual methods of contraception vary widely in their effectiveness. They range from the highly effective methods of diaphram and jelly, condom, and condom combined with douche to the least effective methods of the same period, suppository, and douches. These differences support, in general, the results of previous studies on this subject. (20, pp. 348–349 or 37, pp. 942–943)

It should be noted, however, that suppository and douche (by themselves) reduced greatly the risk of conception. The most effective method—diaphragm and jelly—had an "effectiveness ratio" of 99.5 per cent before the first pregnancy and 95.7 per cent after the first pregnancy. For all douches used singly the corresponding ratios were 86.6 per cent and 81.7 per cent. The effectiveness of rhythm (or safe period) was lower partly because during the 1930's a substantial proportion of the users of this method were misinformed as to what was the safe part of the cycle. (20, p. 343 or 37, p. 937)

C. *Findings from Hypothesis Testing*[6]

A rather arbitrary classification of the twenty-three hypothe-

[6] From *Population Studies,* November, 1953, vii, No. 2, pp. 96–100.

ses under five categories is shown in Table 1. Under each category the hypotheses are listed in the order in which they will be considered in the report. An effort has been made to indicate in applicable cases (a) the direction (i.e. direct or inverse) of the relationship found between the variable dealt with in the hypothesis and both fertility-planning status and size of the "number and spacing planned" family,[7] and (b) whether or not the findings support the hypothesis. It should be emphasized that "support" of the hypothesis does not necessarily mean scientific confirmation, but merely that the direction of the relationship found is or tends to be the same as that hypothesized. The table provides inadequate indication of either the quality of the data or of the strength or consistency of the relationships found. However, a few cases of especially inadequate data are noted, and the term "partially" supported is used for cases in which the relationship is weak, not complete, or is known to arise almost entirely from the influence of another variable.

Cases of "no support" of the hypothesis might arise from finding no relationship at all (indicated by "O" in columns 4 and 5), or a relationship of the direction opposite that hypothesized. The report of "zero" relationship does not necessarily mean that none really exists, but simply that none was found in this study.

Status and Security

Socio-Economic Status. The first hypothesis listed is "The higher the socio-economic status, the higher the proportion of couples practicing contraception effectively and the smaller

[7] The hypotheses relate to size of "planned families," i.e. the "number and spacing planned" and the "number planned" groups combined. However, whereas the data rather frequently yield little in the way of systematic relationship of fertility to the variables considered within the total group of "planned families" they do indicate rather persistent differences between the "number and spacing planned" and the "number planned" groups with respect to patterns of differential fertility. In view of this, and because the "number and spacing planned" group is by definition more successful in planning fertility than the "number planned" group, the results given in Column 5 of Table 1 pertain to the "number and spacing planned" group. The fertility rates are given for the remaining fertility-planning groups in the article cited, and reference is frequently made in the text to the results for the total group of planned families. It is recognized that some further analyses are needed to attempt to ascertain the reasons for the dissimilarity between the "number and spacing planned" and the "number planned" groups with respect to internal variations in fertility.

the planned families." As expected from previous studies, the first part of this hypothesis is definitely borne out, for the proportion of couples practicing contraception effectively[8] tends to increase rather sharply and consistently with rising socio-economic status. The second part of the hypothesis—positing an inverse relation of fertility to socio-economic status among planned families—is not supported. As expected, the familiar inverse relation of fertility to socio-economic status is rather sharply manifested for the total sample of 1,444 "relatively fecund" couples. It is also found to some extent within the "number planned" group considered separately. Within the "number and spacing planned" group, however, the opposite type of relation is found. The fertility rates for this group are relatively low, but they tend to be directly instead of inversely related to socio-economic status.[9] This direct relation is most sharply manifested when husband's income is used as the measure of socio-economic status, but it is also found rather consistently in classifications by rental value of the home, net worth, occupation, education, and score on Chapin's Social Status Scale.

The "number and spacing planned" couples are highly homogeneous with respect to success in preventing unwanted pregnancies. The group is composed (*a*) of couples who practiced contraception regularly after marriage and had no pregnancies, and (*b*) of couples whose every pregnancy was deliberately planned by stopping contraception in order to conceive. Hence, the factor of differential prevalence and effectiveness of contraceptive practice (the factor underlying the general inverse relation of fertility to socio-economic status) is removed for this group.

Economic Security. The next hypothesis is: "The greater the feeling of economic insecurity, the higher the proportion of couples practicing contraception effectively and the smaller the planned families." The classifications by feeling of economic

[8] Couples were considered as practicing contraception 'effectively' if they were classified either as 'number and spacing of pregnancies planned' or as 'number planned.' (6, pp. 79–85 or 35, pp. 225–231; 9, pp. 210–221 or 35, pp. 381–391)

[9] Because of the contrasting nature of the results for the two sub-groups of "planned families," little relation of fertility to socio-economic status is found among the consolidated group of "planned families." (9, pp. 222–241 or 35, pp. 393–412)

Table 1. Indianapolis Study hypotheses classification and results of analyses.[1]

Class and Subject of Hypothesis	Hypothesis Number *See* Vol. II pp. 147–149	Published Article Number	Direction of Relation Found		Has the Hypothesis Been Supported?	
			Fertility-Planning Status	Size of Completely Pl. Fam.	Fertility-Planning Status	Size of Completely Planned Family
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. *Status and Security*						
Socio-Economic Status	3	IX	+	+	Yes	No
Economic Insecurity	2	XI	−	−	No	Yes
Economic Tension	1	XXIII	−	+	No[2]	No[2]
II. *Community and Family Background*						
Family and Childhood Situations	12	XXVIII	±	±	Partially	Partially
Residence and Migration History	11	XVI	±	±	Partially	Partially
Doubling-Up of Families	4	None[2]				
Health of Wife and Husband	21	XIII	+	−	No[3]	No[3]
Health of Children	22	XIII	+	−	No[3]	No[3]
III. *Interest in Home and Children*						
Liking for Children	5	XXIX	0	+	No	Partially
Parental Preference Regarding Sex of Children	10	XIV	DNA	±	DNA	Partially
Children Wanting Brothers and Sisters	6	XXXI	DNA	+	DNA	Partially

Reasons for Second Child:						
Belief "Only Child" Handicapped	8	XXXI	DNA	+	DNA	Partially
Desire To Insure Against Childlessness	9	XXXI	DNA	+	DNA	Partially
IV. *Personality Characteristics*						
Personal Inadequacy	16	XVII	−	−	No	Partially
Feeling Children Interfere With Personal Freedom	7	XXVII	−	+	No	No
Ego-Centered Interest in Children	18	XVIII	+	−	Partially	Partially
Fear of Pregnancy	23	XIX	+	−	Partially	Partially
Rationality of Behavior:						
Tendency to Plan	17	XII	+	−	Partially	Partially
Interest in Religion	15	X	−	+	Partially	Partially
Adherence to Traditions	14	XV	−	+	Partially	Partially
Conformity to Group Patterns	13	XXVIII	±	±	Partially	Partially
V. *Marital Adjustment and Husband-Wife Dominance*						
Marital Adjustment	20	VII	+	+	Yes	Partially
Husband-Wife Dominance	19	VII	0	0	No[4]	No[4]

[1] Symbols:
+ = Direct relation with hypothesis variable (Col. 4–5).
− = Inverse relation with hypothesis variable (Col. 4–5).
0 = No relation with hypothesis variable (Col. 4–5).
DNA = Does not apply (Col. 4 and 6).
[2] Results believed to be spurious because of selective factors.
[3] Data on health very inadequate.
[4] Some results found on reformulated hypothesis.

security are based mainly upon the multiple-choice replies of wives and husbands to a series of questions about confidence in meeting future expenses, frequency of facing the possibility of husband's pay cut or unemployment, and the like.

The first part of the hypothesis is not borne out by the data. Among the couples studied, the effective practice of contraception is directly associated with economic security rather than with economic insecurity, but this relation virtually disappears when socio-economic status is held constant. (11, pp. 50–69 or 36, pp. 476–495) The second part of the hypothesis is supported by the data. The size of "planned families" and particularly the size of "number and spacing planned" families is directly associated with economic security, or, as the hypothesis states, inversely associated with feeling of economic insecurity. (11, pp. 69–111 or 36, pp. 495–537) This relationship is maintained, but to a smaller degree, when socio-economic status is held constant.[10]

Economic Tension. The hypothesis [1] labeled "economic tension" was phrased "The greater the difference between the actual level of living and the standard of living desired, the higher the proportion of couples practicing contraception effectively and the smaller the planned families." Actually the results tend to yield the opposite types of relationship, but there is also good evidence of the existence of selective factors in the measures used. (23, pp. 167–181 or 37, pp. 1005–1019)

An effort was made to get at the difference between actual and desired level of living through two types of approach—the quantitative and the qualitative. The quantitative approach was that of comparing what the couples had with what they wanted with respect to three items: income, home and automobile. Thus, certain sections of the schedules provided data on family income, value or rental value of home, and purchase price of the car if a car was owned. Other sections furnished the replies of wives and husbands to such questions as how

[10] There is a particularly strong tendency for voluntary childlessness to be associated with economic insecurity among the "number and spacing planned" couples. For instance, only 12 per cent of the couples scoring highest (90+) on the summary index of economic security were childless, whereas 57 per cent of the couples scoring lowest (under 60) on this scale were childless. This accounts for much but by no means all of the direct relation of fertility to economic security ratings of the "number and spacing planned" couples in the Study.

much income the family would need in order to live in a *satisfactory* manner, how much they would have to pay to buy or rent a house in which they would *like* to live, and how much they would have to pay for the automobile that they would *like* to own. In each case the amount of the desired item was coded as a percentage of the actual.

The qualitative data were the multiple-choice replies, ranging from "very much" to "very little," to questions regarding amount of additional income needed, interest in having a better home, and interest in having a car or better car.

With both types of data the degree of economic tension (i.e. the extent of the difference between actual level of living and standard of living desired) is inversely related to socio-economic status. This is true despite the fact that the quantitative data manifest no tendency for the poorer people to be unrealistic in their statements regarding what they wanted. Nevertheless, the owner of a second-hand car bought for a few hundred dollars could quite reasonably—and frequently did—express a desire for an automobile costing two or three times this amount. This almost always placed them in a higher "tension" category than, say, persons who owned a Cadillac that was purchased new. Thus the groups with high economic "tension" are weighted with couples of low socio-economic status. This probably helps to account for the failure of the data to support the first part of the hypothesis—the higher the degree of economic tension the larger the proportion of couples practicing contraception effectively.

It was noted above that within the "number and spacing planned" group, fertility is directly associated with the socio-economic status. Selection of this type should operate toward support of the second part of the hypothesis—the greater the difference between the actual and desired levels of living the smaller the planned family. However, it seems reasonably sure that another type of selection affects the classifications by economic tension, for couples with large families would tend to be the ones stating that they need more income. Since they need room for children they would also tend especially to think in terms of a larger house and hence a more expensive house. Selection of this type probably accounts partly for the observed

direct (rather than inverse) relation of "economic tension," as measured, to size of planned family. Whatever the reason, it is certain that the measures of the difference between actual and desired levels of living which were used in the study were far from adequate. The hypothesis appears important on logical grounds; it is to be hoped that satisfactory measures can be developed for testing it in future studies.

Community and Family Background

Family and Childhood Situations. Hypothesis 12 states "Family and childhood situations and attitudes affect the proportion of couples practicing contraception effectively and the size of the planned families." The "family and childhood situations" relate to the parental homes of the wives and husbands interviewed and include such items as "by whom reared," "parents' marital history," "parents' fertility," "happiness of parents," and extent to which parents encouraged the wives and husbands interviewed to have more children.

Kantner and Potter first concentrated on one of these components, and analyzed the relation of "parents' fertility" to the fertility of the couples in the Indianapolis Study. (24, 37) Previous studies, including a recent one by Berent,[11] had indicated sharp relations between fertility of parents and fertility of offspring. However, Kantner and Potter found that:

> Among the Indianapolis couples the relationship between the fertility of the older and younger generation is negligible except perhaps in the case of couples originating from families of identical size. Even in the latter instance, however, less than 10 per cent of the variation in the fertility of the younger generation is attributable to the size of the family of origin. Except among the efficient planners, what relationship there is appears to be partially dependent upon differences in socio-economic status. Thus we have in the case of the present relationship, a hypothesis of low predictive value so far as the

[11] *See* Berent, Jerzy: Relationship between Family Sizes of Two Successive Generations. The Milbank Memorial Fund *Quarterly,* January, 1953, xxxi, No. 1. pp. 39–50.

Indianapolis data are concerned. (24, p. 308 or 37, p. 1083)

The authors further stated:

> It would certainly be unwarranted to conclude that the relationship in question is negligible under all conditions. Where a greater range in the fertility of both the older and younger generations is found, the influence of the parental generation on the succeeding one might be more evident. Related to this is the likelihood that if couples even less efficient at contraception than those in our inefficient planner subsample were included, a greater continuity of family size pattern would be apparent. Finally, the couples taken into the Indianapolis Study were chosen in such a way as to maximize differences between the two generations: for example, many were of rural background but no strictly rural couples were sampled; many had parents with less than eight years of education, yet no couples with so little education were admitted to the sample, and so on. (24, p. 311 or 37, p. 1086)

With respect to the more general factor of childhood situations, Potter and Kantner stated:

> To test the hypothesis that childhood experiences influence fertility, several types of information were collected about the family of origin in addition to its size. These may be classified as those dealing with (a) the affectional tone of the home (e.g., happiness of children, happiness of parents) and the difficulties encountered by the parents in raising their children,[12] (b) the extent to which parents actively encouraged their children to have families of their own, and (c) the structural characteristics of the family of origin (e.g., marital history of parents, ordinal position and number of siblings, occupation, and education of parents). Although there is much that is interesting in these data, no association between them and either fertility or fertility planning has been found. This negative result is especially true for the items relating to the assessment of childhood and parental encouragements to family formation (a and b above). Regarding the structural characteristics,

[12] E. F. Borgatta and C. F. Westoff have used these items in a scale which they call "happiness of family and childhood situations." (25, p. 408 or 38, p. 1112)

couples reared in broken homes or reared by persons other than their biological parents exhibit above-average fertility. Examined within socio-economic categories, however, these differences tend to disappear.

Reasons for so many negative findings are not difficult to find. During the time that elapses between childhood and marriage, early experiences become entangled with a multitude of other influences, the disentangling of which poses formidable problems in a nonlongitudinal study. Even if full information were available on all significant intervening influences, the small size of the Indianapolis sample and the frequently skewed response distributions would tend to frustrate analysis. Other problems probably arise because childhood is recalled so selectively. This does not mean, however, that future research should ignore the childhood milieu. With the aid of more appropriate study designs certain early influences may yet appear as important determinant of fertility. (28, pp. 246–247 or 38, pp. 1189–1190)

Residence and Migration History.[13] Hypothesis 11, listed next, states that the "number, size, and location of communities in which couples have lived affect the proportion of couples practicing contraception effectively and the size of planned families." This hypothesis, consisting of several parts, is partially supported. Families are larger for couples reporting continuous residence in Indianapolis since marriage than for inmigrant couples who had always lived in northern and western cities. Couples with some rural residence since marriage are too few to yield a reliable planned-fertility rate, but they appear to be characterized by highest fertility. The data yield no relationship between fertility-planning status or fertility and number of migrations of the couples since marriage or number of migrations of either spouse before marriage. The authors emphasize, however, that the restriction of the Indianapolis Study to couples living in a large city most of the time since marriage severely impairs the value of the data for studies of residence history and migration. (16)

Doubling Up of Families. The hypothesis on doubling-up within families is the only one of the twenty-three for which no

[13] From *Population Studies,* November, 1953, vii, No. 2, p. 101 .

formal report is planned. The data are inadequate from two standpoints. First, the amount of doubling experience is relatively small, for the field work of the Indianapolis Study was completed before the war-time housing shortages developed. Secondly, whereas other studies have indicated that families living with parents and in-laws tend to be weighted by childless couples and small families, they also suggest that this is largely selective and temporary. Newly married couples frequently start by living with their parents but move out shortly before or after the first child is born.

Health. Although more adequate measures of health of the wife, husband and children would be needed for a rigorous testing of hypotheses 21 and 22, the data that are available fail to support the hypothesis that the poorer the health of the wife, husband or children, the higher is the proportion of couples practicing contraception effectively and the smaller are the planned families. In most cases, the opposite types of relationship are found. (13) To some extent the direct relationship observed between health and fertility-planning status can be explained by the fact that each is directly affected by socio-economic status. There is, of course, little doubt that the hypothesis regarding size of planned family holds for certain families with specific types of illness. Doubtless there are many families who refrain from having more children because the wife is tuberculous, diabetic, or has had only Caesarean deliveries in the past. However, this type of relation appears to be lost in a small sample of the general population in which such cases are relatively few. As noted in Table 1, the measures of health are quite inadequate; they are mainly self-appraisals on general health since marriage.

Interest in Home and Children

Liking for Children. In summarizing the results of their analysis of this subject, Pratt and Whelpton stated:

One of the original Indianapolis Study hypotheses is: The stronger the interest in and liking for children the lower the proportion of couples practicing contraception effectively and the larger the planned family. In the light of present knowledge about social and psychological factors related to fertility it ap-

pears more plausible to reverse the first part of the hypothesis. The Indianapolis Study findings on the relationship between fertility control and marital adjustment, feelings of personal adequacy, ego-centered interest in children, and attitudes toward the restriction of personal freedom point to the importance of positive rather than negative motives for family planning. Unfortunately, the available data do not permit an adequate test of this part of the hypothesis in reversed form. The measures used to represent interest in and liking for children were not designed to represent one or two precise attitude dimensions. Furthermore, it is hazardous to impute a causal connection between attitudes toward children as reported 12 to 15 years after marriage and fertility decisions made throughout that period.

The first part of this hypothesis is sustained in the analysis insofar as a comparison between childless couples and couples with children is concerned. Among the couples that were childless from choice (practicing contraception always or usually) 9 out of 10 had little interest in children. Among couples with children there is a positive relationship between indices of degree of interest in children and effectiveness of fertility planning. The relationship characterizes all socio-economic groups. It is in accord with the idea that a large element in the motivation for fertility planning by couples having children may be a desire to seek the best interests of children and family.

The second part of the hypothesis is sustained among husbands, at least. Family size is positively related to indices of degree of interest in children among all couples and effective planners; but the principal source of the variation is the greater tendency to have *some* rather than *no* children among couples with strong liking for children than among those with little liking for them. Among husbands in all socio-economic status groups there is a tendency for more interest in children to be accompanied by larger *families*. This tendency is not found among wives.

The highest fertility among the number and spacing planned couples is found when the husband is strongly interested in children and the wife only moderately or little interested, suggesting that, if the husband has a strong liking for children, a strong liking by the wife tends to hold down family size. The wife's

liking for children does not appear to be expressed in terms of large family size.

Among couples classified as number and spacing planned, the direct relationship between degree of interest in children and number of children wanted at marriage is closer for husbands than for wives. But there is a direct relationship for both wives and husbands between liking for children and the number of children they would have on the basis of liking if they could live married life over again. This holds true for all couples, couples with children, and couples classified as number and spacing planned. It suggests that there is a tendency for strong interest in children to produce a desire for a large family among women as well as men, but that this does not occur in women until after they have had their families. Other pressures apparently have more effect with women.

One influence which may be competing with interest in children is the general inclination for couples to think that a two-child family is the best size regardless of their level of liking for children. However, in addition to the tendency for all groups to want two children at marriage, there is clear indication that the size of family wanted at marriage, and the size that would be chosen on the basis of liking if married life could be relived, are both related to the number of children the couple actually has. (29, pp. 462–463 or 38, pp. 1243–1244)

Sex of Children[14] . . . Hypothesis 10 also lacks specificity regarding direction of relationships, being worded, "preferences regarding the sex of children affect the size of the family." When this hypothesis was formulated it was realized that the factor could operate in both directions. It might encourage some couples to "keep trying" until they have a child of the sex preferred. On the other hand, it might be a deterrent to further fertility among couples having children of the sex preferred. Within their limitations the data suggest the actual existence of both types of relationship (indicated by ± in Column 5 of Table 1), but they also indicate that the factor of sex preference is not a major determinant of family size except among a small proportion of the couples. (14, 36) An important

[14] From *Population Studies,* November, 1953, vii, No. 2, p. 102–103.

weakness of the data is that the statements regarding sex preference in children are *ex post facto*. The existence and direction of parental preferences regarding sex of children are based mainly upon the replies of wives and husbands to suppositional questions such as "If you could have only one child, would you rather have: — a boy; — a girl; — don't care?" "If you could have only two children would you rather have: ——a boy and a girl; —— two boys; —— two girls; —— don't care?" The fertility rates are consistently lowest for couples having sex preferences fulfilled with respect to first child and first two children and highest for those not having sex preferences fulfilled in this manner. The couples replying "don't care" are in an intermediate position with respect to fertility. It is also apparent, however, that couples with only one child and only two children were most likely to state preferences that were in accord with the actual sexes of the first child or first two children. This would help to account for the fertility differentials observed. Furthermore, the mere fact that the couples tend to state preferences in terms of the actual sex of the children suggests that they rather quickly became satisfied with what the stork brought. However, a small proportion of the couples did appear to bear out the old proverb that the wish for sons is the father of many daughters. In general, the hypothesis on sex preferences is regarded as having been partially supported.

Children wanting Brothers and Sisters. Hypothesis 6 states that the interest of children in and their desire for brothers and sisters affects the size of the family. Solomon, Clare, and Westoff pose and answer the following question:

> In other words, is there any variability in fertility attributable to the expressed attitudes concerning this reason; is this motivation a source of differential fertility? The answer is clearly negative. There are no meaningful differences in the number of children born to couples that state this reason as the first, second, or third most important for having the last child, or who report that they were positively motivated by a consideration of this factor. (31, p. 176 or 38, p. 1297)

Reasons for Second Child. Two hypotheses relate to reasons

for having the second child. Hypothesis 8 states that "the belief that an only child is handicapped is an important reason for having a second child." Hypothesis 9 states that "the desire to insure against childlessness is an important reason for having a second child."

Most of the data pertinent to these hypotheses were collected from only 550 couples with one child living at the time of conception of the last child, i.e., two-child families. The actual analysis was further restricted to the 239 couples who deliberately planned the second child by stopping contraception in order to conceive.

> It was found that Hypothesis 8, "The belief that an only child is handicapped is an important reason for having a second child," is a major reason for having the second child for all of the couples included in the analysis. The importance of this motivation is somewhat greater for those couples who presumably had secondary contact with only-child families, that is, those classified as members of the "high" SES level and those whose spouses were only children, although it is cited as a major reason by virtually all of the couples. By comparison, Hypothesis 9, "The desire to insure against childlessness is an important reason for having a second child," was determined to be of only minor importance by the replies of the couples. There is some differentiation within the sample of the significance of this motivation for having a second child, notably that it is of greater importance in the case of couples with some previous experience or conscious awareness of the possibility of being left childless (the questions were asked *after* there were two living children), although in no case can it be inferred that the data support the hypothesis that this is a major reason for having the second child. (31, p. 175 or 38, p. 1296)

Concerning the last three hypotheses, the analysts state:

> Since these data are *ex post facto* we were, in effect, examining the "importance" of reasons for having a child *after* the child was already born. Therefore, we cannot actually ascertain the "effect" of any of the particular reasons upon having the

child. All that we are measuring is the parents' stated recollections of reasons for having done something that had been, in fact, accomplished prior to the time the questions were asked. Thus, a cause-effect conclusion is precluded. It is only by inference that we can suggest the possible effects of the reasons cited. (31, pp. 176–177 or 38, pp. 1297–1298)

Personality Characteristics

Personal Inadequacy. The first hypothesis listed under the "personality characteristics" category is number 16, which reads: "The stronger the feeling of personal inadequacy, the higher the proportion of couples practicing contraception effectively and the smaller the planned families." Like economic security, personal adequacy is directly related to both fertility-planning status and size of the planned family.[15] (17, 36)

> . . . It is true, however, that the "number and spacing planned" couples are responsible for . . . the . . . direct relation of fertility to adequacy for all "planned families" (i.e. the "number and spacing planned" and "number planned" groups combined . . .). The relation is very irregular within the "number planned" category alone. (17, p. 281 or 36, p. 783)
>
> When socio-economic status is held constant, the direct relation of personal adequacy to fertility planning persists only slightly, and the direct relation of adequacy to size of planned family disappears altogether. A classification by jointly considered summary indexes of personal adequacy and economic security yields an interesting result. On the one hand, success in *planning* the size of family seems to be more dependent upon the presence of the emotionally stable, self-confident, well-satisfied personality than the more narrowly circumscribed confidence that accompanies a feeling of economic security. On the other hand, the actual number of children had by couples who effectively plan their family size is related much more to a feeling of economic security than to personal adequacy.

Personal Freedom. The second hypothesis listed under "personality characteristics" is "the stronger the feeling that chil-

[15] From *Population Studies,* November, 1953, vii, No. 2, pp. 103–104.

dren restrict personal freedom, the higher the proportion of couples practicing contraception effectively and the smaller the planned family."

> To test this hypothesis concerning motivation for fertility control and small families by using the data of the Indianapolis Study, it is necessary to assume (1) that "the feeling that children interfere with personal freedom" is so stable and basic a psychological factor that it persists relatively unchanged throughout varying experiences, including those of parenthood itself, and (2) that such "feeling . . ." can, at least in some rough measure, be discovered and measured in responses to questions of the type used. (27, pp. 63–64 or 37, pp. 1139–1140)

The items designed to measure the "feeling that children restrict personal freedom" consisted of self-ratings of each spouse and interviewer's ratings of each spouse on the stated characteristic. In addition, there were self-ratings on amount of additional time wife and husband would have liked for visiting, entertaining, and various forms of recreation since the first child was born, extent to which being tied down by children had bothered them, and extent to which it had discouraged them from having more children. The couples were also asked to what extent they would be encouraged to have more children by the availability of more nurseries and kindred services.

All of the items mentioned above related to childless couples as well as to those with children. However, the rewording of the questions for childless couples frequently caused the item itself to be quite different from that for the couples with children. Thus, whereas the couples with children were asked to give replies regarding their past feelings about personal freedom since their first child was born, the childless couples were asked suppositional questions about their feelings *if* they had children.

In summarizing their analysis, Riemer and Whelpton stated:

> It is evident that the above data offer no support for the hy-

pothesis that a feeling that children restrict personal freedom motivates couples to control fertility and plan small families. Consistent inversion of the expected relationships calls for explanation, however.

No one would seriously argue that people who feel strongly that children interfere with their personal freedom tend to be more careless in their use of contraception or would plan larger families than people not having such an attitude. Attention to the wording of the questions on which the attitude indices are based suggests that for couples with children these questions have little relevance to the motivation for fertility control. They refer rather to the experiences encountered in caring for children.[16] For the deliberately childless couples, the questions asked are directly relevant and supply some evidence in support of the hypothesis. But the number of childless couples in the study is small, the time reference of their responses is indefinite, and their response frequencies cannot be compared directly with those of any other group. Accordingly, their usefulness for this purpose is severely limited.

We conclude, therefore, that the data are inadequate to test the hypothesis originally formulated. The reasons may be summarized briefly. First, in the design of the Study it was assumed that the psychological factors which motivate fertility control and small families are sufficiently basic and stable aspects of personality to be discoverable after a variety of experiences throughout twelve to fourteen years of married life. Formulated as a distinct and separate psychological factor, a "feeling that children interfere with personal freedom" is neither sufficiently basic nor stable to meet this requirement. Such "feeling . . ." makes sense as a common but variable expression of a value hierarchy in which family building has low rank. Such a conception, however, would have called for a different series of questions. Second, the questions were so phrased that, whatever were the attitudes which conditioned fertility behavior in the twelve to fourteen preceding years, responses of couples with children tended to be made primarily in terms of their ac-

[16] The item "How much has . . . not wanting to be tied down more by children . . . discouraged you and your husband [wife] from having more children?" is worded like a motivation question, but seems to have tapped the same experience dimension as the other items.

tual experience with child care. (27, pp. 72–83 or 37, pp 1148–1149)

Riemer and Whelpton thereupon reformulated the hypothesis and analyzed the variations in feelings of restriction among people with different experiences in family building. They stated:

> Specific hypotheses are that the feeling of restriction—as manifested in a general index of "feeling . . ." and an index of "more time wanted" for various activities—are associated with (1) unsuccessful fertility control, (2) number of children, and (3) low socio-economic status. In general the data confirm that lack of success in fertility planning and having three or more children are associated with a feeling of restriction. The association appears to be closer when feeling of restriction is measured by the index of "more time wanted" for various activities than when measured by the index of more general "feeling. . . ." No clear association exists, however, between socio-economic status and feeling of restriction among couples with children. (27, p. 103 or 37, p. 1179)

Ego-centered Interest in Children.[17] The meaning of Hypothesis 18, which reads "the greater the extent to which interest in children is a matter of *personal* satisfaction, the higher the proportion of couples practicing contraception effectively and the smaller the planned family," may be clarified by use of the term "ego-centered interest in children." Whereas Hypothesis 5 (liking for children) may be described as one relating to "child-centered interest in children in general," the present one is concerned with "ego-centered interest in one's own children." For measures of the latter, there are eight questions (six restricted to parents) on such matters as whether the respondents wanted their children to be independent even if this meant that the children would not always take their advice, the right of parents to expect children to appreciate the sacrifices made for them, and the degree of comfort found in thinking how much their children love and need them.

[17] The sections on ego-centered interest in children, fear of pregnancy, and rationality of behavior are from *Population Studies,* vii, No. 2, pp. 105–106.

Classifications by replies to some of the questions support the hypothesis. In general, however, the data for couples with children fail to show a consistent relation between "ego-centered interest in children" (as measured) and fertility-planning status, and provide only very slight support of the suggested inverse relation between this interest and size of planned family. The replies to the two questions that were not restricted to parents suggest that the proportion of couples that are childless may be directly related with the degree of ego-centered interest in children. In general, however, it appears that the specific questions are not good indicators of "ego-centered interest in children," and hence, that the hypothesis has not been adequately tested. (18)

Fear of Pregnancy. (Hypothesis 23) appears to be no important deterrent to fertility after the first childbirth. In other words, among "planned families" the proportion of childless couples increases with fear of pregnancy, but there is little relation of fertility to "fear" among couples with children. Since the childless couples, by definition, are largely in the "number and spacing planned" group, they also are responsible for the slight direct relation of fear of pregnancy to fertility-planning status. (19)

Rationality of Behavior. In the analyses of three hypotheses —tendency to plan in general (No. 17), religious interest (No. 15) and adherence to traditions (No. 14)—it has been suggested that these variables may be different aspects of a single larger variable called "rationality of behavior." By rationality is meant "the extent to which behavior is a result of calculated choice between alternatives rather than the unquestioning acceptance on faith of the traditional behavioral standards of the group to which the individual belongs." The findings indicate that traditionalism, general planning and religion[18] are each related to fertility variables, but that the relationships are in large measure a joint function of the socio-economic status of the couples interviewed. In general, the findings lend only modest support to the hypotheses. The bearing of the three sets of specific findings on the more general hypothesis of the

[18] For an analysis of Indianapolis study materials on the socio-economic correlates of Protestant denominations, *see* reference 47.

relationship between rationalism and fertility is inconclusive although suggestive. (10, 12, 15)

Conformity. Hypothesis 13 states "Conformity to group patterns affects the proportion of couples practicing contraception effectively and the size of the planned families." Potter and Kantner have summarized their findings on this question as follows:

> Among the hypotheses formulated at the outset of the Indianapolis Study was one that posited a relationship between conformity to group patterns and both fertility and contraceptive effectiveness. Over half of the items here probe for values pertinent to fertility (ideal number of children, best age to marry, best birth intervals, attitude toward childlessness, attitudes toward birth control clinics and birth control advertisements, etc.). A modal or median response has been ascertained for each value. However, the degree of deviation from these empirically established norms shows little relationship either to fertility or fertility planning. The result is also negative when conformity, measured by an interviewer rating scale, is treated as a personality trait. (28, pp. 246–247 or 38, pp. 1190–1191)

In the above, "conformity" was treated as acceptance or nonacceptance of the majority position on various values pertinent to fertility and as a generalized personality trait. Potter and Kantner also viewed "conformity" more narrowly as responsiveness to the fertility examples provided by relatives and friends. They undertook an analysis of the fertility correlations between couples and their siblings and friends. The results were summarized as follows:

> The relationships between the couples' fertility and the fertilities of husbands' or wives' siblings are very weak. In the sample of "efficient family planners" they barely reach statistical significance. Among "inefficient family planners" they do not exist independently of socio-economic status. Relationships equal to those found could be expected between any two groups having statuses as closely related as those of the couples and their siblings.
>
> A much stronger bond exists between fertility of couples and

fertility of wives' three friends. A correlation coefficient of .37 is met in the "efficient planner" subsample and is maintained within socio-economic strata. This apparently linear relationship holds up well at both extremes of couple fertility. Childless wives, more often than wives with children, report as friends women without living children. Wives having three or more children report friends of higher fertility than do wives with two children.

Unexpectedly the fertility correlation between couples and wives' friends is just as high in the "inefficient planner" sample, standing at about .40. One reason for this surprising result is mechanical: the family sizes of couples are 38 per cent more variable in the "inefficient planner" sample than in the "efficient planner" sample. The relationship also depends partly on the fact that couples and friends tend to be similar in socio-economic status and therefore in effectiveness at birth control. The amount of variation in couple fertility which can be accounted for in terms of fertility of wives' friends is reduced 40 per cent when socio-economic status is held constant. (28, p. 263 or 38, p. 1206) . . .

Seemingly the fertility relationship between couples and wives' friends has a multiple basis. Friends are in a strategic position to influence family size ideals. Couples of similar fertility are apt to find more in common and to seek each other out as friends. Principles of nonpurposive selection may also operate. Couples of like fertility are led into unintentional association by similar housing needs and common activities, with propinquity then favoring the formations of friendships.

From the data at hand, it is impossible to say which principle contributes the most. One cannot decide whether influences upon family size ideals play a primary or secondary role in the overall relationship. Nevertheless there are several reasons for believing that the principles of purposive and nonpurposive selection together have an important, if not predominant, role.

(1). The main reason for suspecting that selection plays a large part in the relationship of couples' fertility and friends' fertility is the persistence of the relationship in the "inefficient planner" sample. To be sure, it shrinks when proper account is taken of the wider variation in fertility and of the partial de-

pendence of the relationship on socio-economic status. Nevertheless a sharper shrinkage would be expected if the relationship depended heavily upon wives being influenced by their friends. Such influences forfeit much of their power among couples unable to practice efficient birth control.

(2). Evidence has been provided that childless wives tend to have childless wives as friends. It is a little far-fetched to think of a newly married wife coming into the company of several childless wives and then being "influenced" to remain childless herself. It is much easier to think of wives coming together on the basis of common interests that are partly conditioned by the absence of children.

(3). Finally there is the consideration that "friends" in this report doubtless refers in the main but not necessarily to three *current* friends of the wife. Current friends may not be the crucial ones from the standpoint of influencing fertility. This would be especially true for couples who made their basic fertility decisions much earlier. (28, pp. 265–266 or 38, pp. 1208–1209)

Marital Adjustment and Husband-Wife Dominance[19]

Marital Adjustment. The analysis of the data for Hypothesis 20 concerning marital adjustment yields several points of interest. Among the total group of "relatively fecund" couples the proportions of couples reporting happy marriage, little disagreement over family matters, and "little desire to improve the spouse" decrease consistently with number of living children. In other words, for the total sample, marital adjustment appears to be inversely related to fertility. However, this may be the result of the direct relation which is found between marital adjustment and success in preventing unwanted pregnancies. Furthermore, within the "number and spacing planned" group marital adjustment appears to be positively correlated with success in having *as many children* as wanted. Stated in more general terms, the data suggest that among Indianapolis couples marital adjustment is directly related to successful family planning both with respect to preventing unwanted pregnancies and, among the "number and spacing planned"

[19] From *Population Studies,* November, 1953, vii, No. 2, pp. 106–107.

couples at least, with respect to success in having as many children as wanted.[20]

Husband-Wife Dominance. Hypothesis 19, which reads: "That member of the couple who is dominant in general family matters tends also to be dominant in determining whether conception shall be controlled and [in determining] the size of the planned family," could not be tested in the form presented because of the infrequency of cases in which either the wife or husband could be classified as "dominant in general family matters." In an attempt to measure "dominance" the wives and husbands were asked who made the decisions on a variety of things, e.g. who usually decided whether or not the family could afford a new car, which movies to see together, which radio program to hear, which couples to keep as friends, and which house to rent or buy. Some three-fourths of the wives and husbands reported that these matters were decided on a fifty-fifty basis. Furthermore, among the remaining replies, a rather frequent pattern was that of the husband appearing to be dominant in certain spheres and the wife in others. Thus if the decision as to which house to buy or rent was not made on a fifty-fifty basis is was more likely to be made by the husband than the wife. In contrast, the wife tended to be the one who decided which friends to visit, which movies to attend, which radio programs to listen to, etc. It is quite possible, of course, that different results would be found for another group or with different criteria of dominance.

A positive finding that emerges from the analysis concerns dominance with respect to contraception and size of family. The data suggest that fertility planning was most successful among couples in which both the wife and husband state that responsibility for contraception was a fifty-fifty proposition, and was least successful among couples in which each spouse said that the other should take the responsibility regarding contraception. When each wished the burden on the other,

[20] In Reed's analysis, the "number and spacing planned" couples were considered to have as many pregnancies as wanted if the number of pregnancies (or live births, if live births exceeded pregnancies due to multiple births) experienced was as large as the number given by both wife and husband in reply to the question, "If you could begin your married life over again and the size of your family could be determined only by your liking for children, how many would you have?" (7, pp. 383–411 or 35, pp. 259–287)

apparently neither spouse took much responsibility; these are the couples who on the average had the largest number of unwanted pregnancies. (7, pp. 411–425 or 35, pp. 287–301)

Social Mobility

None of the original hypotheses was directly concerned with "social mobility." The nearest approach was the one on economic tension or "the difference between actual level of living and the standard of living desired." Yet, whereas "economic tension" might be interpreted as a drive or predisposition for social mobility, it is not of itself the act of social mobility.

Despite the lack of more adequate data on social mobility, two of the contributing authors designed and carried out studies of the relation of fertility and fertility-planning status to two different aspects of social mobility. Kantner analyzed the existing materials on inter-generational mobility and Riemer was responsible for the materials on intra-generational mobility. Besides the detailed analyses afforded by the unpublished theses, the chief findings are set forth in previous articles in the series. (22, 23, 37) As expected, there were many limitations to the available data. However, two types of *intergenerational* social mobility could be considered—occupational and educational.

Occupational mobility is indicated by a difference in the occupational class of father and son and also, in some cases, father and daughter with the daughter's occupational classification being derived from her husband's. The husband's longest occupation was used in establishing a couple's present position. The original status level was determined from the father's occupation during the period when the son or daughter was "growing up" (6 to 16 years of age).[21] The conventional occupational

[21] For more refined measures of intergenerational occupational mobility, stricter comparability of the age of father and son would be required. Thus the occupational class of the son should be compared with occupational class of the father at the same age. As indicated above, the paternal occupational class is the one observed when the son (husband in the present Study) was 6–16 years of age. Furthermore, by virtue of the eligibility requirements in the present Study there is a marked concentration of husbands in the 35–39 category.

If there were no control over age whatsoever one might expect the "upwardly

(Continued on page 312)

classifications developed by the Bureau of the Census were used.

Educational mobility is indicated from a comparison of the educational levels achieved by parents and offspring.[22] Although chief attention is given to the husbands' educational mobility, certain tabulations consider jointly the educational mobility of husband and wife. Unlike her occupational classification, the wife's educational classification is made on the basis of her own educational attainment, not that of her husband. (22, pp. 70–71 or 37, pp. 970–971)

Three hypotheses regarding *intergenerational* mobility were formulated:

> Hypothesis *a*—The families of socially mobile couples are smaller than those of socially nonmobile couples of comparable status.
>
> Hypothesis *b*—The planned families of socially mobile couples are smaller than the planned families of socially nonmobile couples of comparable status.
>
> Hypothesis *c*—Socially mobile couples are more effective in fertility planning than socially nonmobile couples of comparable status. (22, p. 74 or 37, p. 974)

Although exceptions [were found] the data support Hypothesis *a* in that families exhibiting intergenerational upward mobility tend to be smaller than nonmobile couples of comparable status. Within the same limits they support Hypothesis *b* in that similar results are found when the analysis is restricted to planned families.

Hypothesis *c* was not confirmed as originally stated. However, at least in the case of upward mobility, the data are not

mobile" husbands to be older on the average than the "downwardly mobile" husbands since they had longer opportunity to "better" the occupational class of fathers. Likewise, one might expect the father-son differences in ages to be wider on the average among the "upwardly mobile" than among the "downwardly mobile" group. Actually, no systematic differences of this type were found in the present Study.

[22] Education level is determined by the highest grade completed. The educational categories are not strictly equivalent for the two generations but rough equivalents can be employed.

inconsistent with the view that mobility partially overcomes resistances to contraception, giving upwardly mobile couples a position intermediate in fertility-planning effectiveness between the levels of effectiveness of origin and destination groups. Consistent with this view also is the greater regularity of contraception among upwardly mobile couples. This is taken as an indication of the desire to regulate reproduction but a desire that apparently is handicapped by relatively ineffective practice. (22, pp. 101–102 or 37, pp. 1001–1002)

For measures of *intragenerational* social mobility, chief reliance was placed on occupational changes of the husband after marriage. Other variables that were introduced as controls or in subsidiary manner were occupational class of husband's father and summary score on socio-economic status. Because of the various subdivisions required in the analysis, a simple dichotomy of occupations was utilized. The two classes were labeled "head" and "hand" and corresponded to the conventional "white collar" and "manual worker" classes.

Again the results were far from satisfactory because of smallness of samples and the frequent necessity of "make do" categories and procedures. However, the summary of results is interesting:

Summary. The proportions of successful fertility planners and average family sizes by broad categories of occupational mobility after marriage are in general consistent with the notions that upward mobility is at the expense of some deliberate fertility restriction and that the downwardly mobile have intermediate planning success and moderate fertility. They failed to show, however, that either the total or planned fertility of upwardly mobile couples is as low as that of couples nonmobile at the white collar level after marriage. The specific hypotheses proposed are supported much better when mobility before marriage is taken into account by using occupation of husband's father as an index of social status during the husband's childhood. It appears that deliberate childlessness, rather than small families, accounts for much of the low planned fertility of mobile couples.

An effort to get more homogeneity within groups and further differentiation of kinds of mobility was made by sub-classifying according to summary index of SES. By comparing the differentiated groups on a variety of items in their marital histories, some plausible interpretations were derived for the interrelationships of mobility, inferred mobility aspiration, and fertility in the various groups. Their value lies in their possible usefulness in devising more adequate hypotheses for future studies.

These interpretations suggest that although the upwardly mobile strive for fertility control, they do not all strive for extreme fertility restriction. Very small planned families and childlessness are associated especially with those who may be judged to have a relatively disadvantaged position in the struggle for advancement or in maintaining their standard of living, whether their disadvantages derive from childhood background or from personal disabilities. Moderately large planned families and a low rate of childlessness appear to be associated with a relatively advantageous position in terms of childhood background and personal ability. There is no evidence that low fertility of the upwardly mobile is generally due to late marriage. Downwardly mobile couples seem to be selected for initial lack of fertility control. Included among the downwardly mobile, however, are not only couples of inferior abilities and victims of economic forces who are striving to maintain their previous standard of living, but some few couples who apparently plan large families without concern over their status. (23, pp. 210–212 or 37, pp. 1048–1050)

Scaling and Factor Analysis

In two articles of the series, Westoff and Borgatta undertook to test the sensitivity of the data to the recently developed techniques of scaling and within the limits of the scale definitions (which deliberately cut across the original hypothesis designations) to ascertain the maximum level of prediction of fertility. A total of thirteen scales was constructed and a factor analysis was performed with the intercorrelation of these thirteen variables in addition to seven socio-economic varia-

bles, fertility planning and fertility. The first of the two articles focussed on the prediction of total fertility. (25) The significant factors in this prediction were found to be the socio-economic or "material style of life" factor and the extent to which fertility was planned (a factor generalized as the "successful-modern-rational family" factor) which together accounted for 59 per cent of the total fertility variance that was controlled. The remaining factors added only 2 per cent to this prediction. (26, pp. 59–60 or 38, pp. 1134–1135)

The same statistical approach was made "to the more theoretically significant question of the prediction of planned fertility. The five factors isolated for this population, however, contributed a net control of only 18 per cent of the variance of planned fertility. Of the total variance only a little over 1 per cent was contributed by the socio-economic or 'material style of life' factor. The major factor relevant to planned fertility (accounting for 16 per cent of the variance) is a factor which we identified as a 'child-affect-respectability' factor. This factor was defined largely by variables relating to liking for and interest in children, adherence to traditional values and interest in religion. The main reason for the reduction in prediction is the exclusion (by definition) of the fertility planning variable." (26, p. 60 or 38, p. 1135)

Research Training Role of the Indianapolis Study

A little-publicized role of the Indianapolis Study has been providing thesis materials for graduate students. Since most members of the Indianapolis Study Committee had academic connections, the possibility of giving blocks of data to promising graduate students, as thesis materials, was discussed from the beginning. The course of events encouraged an expansion of the plan.

When the Study was begun most members of the Committee expected to have at least some part in the analysis of the data and the writing of the reports. The coming of World War II, and the changes in members' roles by the end of the

war prevented most of them from doing so. In consequence, the plan to utilize graduate students eventually was expanded.

The Study materials were used by nine graduate students in six universities,[23] for seven doctoral theses and three masters theses (in one case for both).[24]

The consignment of Indianapolis Study materials to graduate students was made in each case under a tri-partite agreement involving the Indianapolis Study Committee, the graduate student, and the department in which the student was working. Under the usual plan, the student received a fellowship from the Committee and agreed to analyze the data pertinent to a selected hypothesis. The terms of reference generally included (a) co-authorship of a Study-series article with a member of the Study Committee, and (b) the use of the Indianapolis Study materials for thesis topics. In some cases the same article served both purposes simultaneously. In others, the student's faculty adviser or the student himself preferred some different type of approach or some additional or different set of data for the thesis.

Some readers may be interested in knowing about the advan-

[23] The list is as follows. For cases of multiple articles, the symbol * indicates the one relating most closely to thesis subject.

Student	University	Degree	Article in Indianapolis Study Series
Robert B. Reed	Chicago	Ph.D.	VII
Jeanne E. Clare	Columbia	A.M.	XIV, XXXI
John F. Kantner	Michigan	Ph.D.	XVI, XXII,* XXIV, XXVIII
Charles F. Westoff	Pennsylvania	Ph.D.	XVII,* XX, XXI, XXV, XXVI, XXXI
Marianne DeGraff Swain	New York Univ.	A.M. & Ph.D.	XVIII
Nathalie Schacter	Columbia	A.M.	XIX
Ruth Riemer	Michigan	Ph.D.	XXIII, XXVII*
Robert G. Potter, Jr.	Harvard	Ph.D.	XXIV,* XXVIII
Lois Pratt	Michigan	Ph.D.	XXIX, XXX*

[24] In addition to the students, the following wrote indicated articles for the Indianapolis Study series: Dr. Ronald Freedman (x, xii and xv), Mrs. Lee F. Herrera (xiii and xx), Dr. Edgar F. Borgatta (xxv and xxvi), Mr. Erwin S. Solomon (xxxi), and Dr. H. V. Muhsam (xxxii). Dr. Gerhard Lenski (47) prepared a special analysis of the data on religious denomination.

tages and disadvantages of the multiple analysis of hypotheses and authorship of articles that has characterized the Indianapolis Study. They may want to know in general whether the utilization of graduate students was successful.

On these questions the two present authors can but express their own opinions. The objectivity of their appraisal may be impaired somewhat by their debt of gratitude to the contributing authors who did much to help complete the tremendous job of analysis and writing. In general, their appraisal is as follows. The multiple plan had the distinct advantage of keeping freshness in the approach. It had the disadvantage of leading to more departure from uniformity in such matters as definition and classification. The cases of inconsistency in the latter respect are of relatively small consequence in comparison with the advantages afforded in the diversity of points of view and approaches to the problems considered. There were the advantages of enthusiasm and industry of young students balanced against inexperience in handling survey materials and preparing them for publication. There were also the expected instances of exasperation. In retrospect the present authors are, without exception, pleased with the jobs done by the students. There were some cases of brilliant use of the materials made available to them.

It is pertinent to consider this matter from the standpoint of the students as well as the study. Here, too, the present authors can express only their opinion, which was formed partially on the basis of the verbalized reactions of the students and their faculty advisers.

The students generally considered themselves fortunate to receive a ready-made block of data. Their quest for a "thesis subject" and for some financial help was automatically ended, and they obtained a short-cut to authorship of a published article. On the other hand there were instances of both students and their faculty advisers complaining that the arrangement offered the student no experience in designing a study and no experience in field work. In several instances it was

felt that the design of the analysis had also been formalized to the extent that the student was not greatly stimulated to "strike out on his own."

The present authors believe that the last mentioned criticism might be justified only with reference to some of the masters theses. In each Ph.D. thesis the candidate definitely did venture out beyond the pattern of analysis laid down for the published series of articles. This is something for which credit is given both to the high standards of the faculty advisers and to the curiosity and ingenuity of the doctoral candidates themselves. The candidates wrote good theses with Indianapolis Study materials; they would have written good theses with other materials.

Methodological Lessons of the Indianapolis Study[25]

Four broad types of "lessons" are discussed: those concerning (1) the independent variables; (2) the dependent variables; (3) the size and character of the sample; and (4) the general design of the Study.

1. The Independent Variables

(a) In a study entitled "Social and Psychological Factors Affecting Fertility" the social and psychological factors were, in the nature of the case, assumed to be the independent variables and fertility behavior was considered to be the dependent variable. It was realized from the beginning, of course, that in social science there is an interaction of variables and this matter will be discussed later. For the present, the chief lesson to be emphasized concerns the generally closer relationship of fertility to broad social factors (including the economic) than to the psychological factors. More specifically, the relation of fertility and fertility-planning status to socio-economic status

[25] This section is composed of excerpts from Kiser, Clyde V.: Methodological Lessons of the Indianapolis Fertility Study. Proceedings of the World Population Conference, Rome, August 31–September 10, 1954. Vol. vi, United Nations, New York, 1955, pp. 323–334.

This section was also published in substantially the same form in Kiser, Clyde V.: Methodological Lessons of the Indianapolis Fertility Study. *Eugenics Quarterly*, September, 1956, iii, No. 3, pp. 152–156.

was consistently sharp. The observed relation of fertility behavior to most of the psychological characteristics considered was generally much less pronounced or less regular, *especially when socio-economic status was held constant.*[26]

There was one outstanding exception. The relation of economic security to the size of completely-planned families was conspicuous and quite independent of socio-economic status. Nevertheless, the central problem of a future investigation might well be that of trying to secure a better understanding of the factors underlying differential fertility according to socio-economic status and especially the role of psychological factors.

(b) As indicated in previous critiques, the scope of the Indianapolis Study was too wide for adequate treatment. There were twenty-three hypotheses, each of which was concerned with the relation of a given social or psychological factor to effectiveness of contraceptive practice and size of planned family. Thus when we say that the scope of the Indianapolis Study was too broad we mean that too many social and psychological factors were included for investigation.

(c) A closely related criticism is that the twenty-three hypotheses of the Indianapolis Study were not bound together by an integrating theory or organizing principle. As indicated in a previous publication, the twenty-three hypotheses which form the basis of the Study are not systematically interrelated and little attempt was made to link the hypotheses to any basic social or psychological theory.[27]

(d) As a result of attempting to investigate too many hypotheses in one study, the variables are not always precisely defined or well conceptualized. An example of this is the variable "personal interest in children." The analysts correctly interpreted this variable as meaning "ego-centered interest in children" but the concept was incorporated in the hypotheses without any precise definition.

[26] We may have been more successful in establishing relationships between (a) fertility and fertility-planning status and (b) socio-economic status than between the former and psychological factors because at that time (as in fact is still the case) better measures had been developed for socio-economic status than for psychological factors.

[27] *See* Kiser, Clyde V.: Exploration of Possibilities for New Studies of Factors Affecting Size of Family. The Milbank Memorial Fund *Quarterly,* xxxi, No. 4, October, 1953, pp. 437–440.

(e) A related consequence of attempting a study too broad in scope and of insufficient time devoted to conceptualization was that the variables in the hypotheses—especially the psychological variables—were not always well measured. The time spent on field trials evoked the admiration of contemporaries but insufficient attention was paid to tests of reliability and validity.[28]

Preliminary experimentation with data relating to "economic tension" (difference between the actual and desired levels of living), might have sounded a warning about the selective factors in these particular data. "The selective factor consisted in an inverse relation of what we call 'economic tension' to socio-economic status. That is, couples of lowest socio-economic status tended to exhibit the largest percentage difference between what they had and what they wanted." (43)

By way of extenuation it may be said that when the Committee decided to attempt to test twenty-three hypotheses, they regarded their effort not as any attempt to get an adequate testing of each hypothesis but rather as a "dragnet" approach. It was hoped that the "dragnet" would serve to indicate which of the twenty-three hypotheses could be discarded and which ones deserved more intensive study in future investigations.

2. *The Dependent Variables: Effectiveness of Contraceptive Practice and Size of Planned Families*

(a) In our opinion, the measures of fertility-planning status and size of planned family did not pose problems comparable with those associated with the independent variables.

In a paper prepared for the [World Population] Conference [of 1954] . . . , Dr. Robert M. Dinkel questioned the adequacy of the classification by fertility-planning status that was used in the Study. It is true that in the analyses chief reliance has been placed upon single indices of fertility-planning status and fertility—i.e., classifications relating to the total period since marriage. More detailed indices were available (such as regularity of contraceptive practice at the time of each pregnancy) but the sample is too small to warrant use of the more detailed

[28] If the study had been postponed until all psychological variables could be measured well, the study would still be in the planning stage.

indices. We would agree that the measures of the dependent variables, especially fertility-planning status, can stand much improvement. Nevertheless, it is also our belief that more serious problems lie in other areas.

It is pertinent, however, to question the desirability of carrying the two dependent variables in parallel fashion in future studies. It will be recalled that most of the hypotheses in the Indianapolis Study were "double-barreled" in that they were concerned with the relation of a given factor to both effectiveness of contraceptive practice and size of planned family. This design worked nicely in that the families classified as practicing contraception effectively were synonomous with those classified as planned families. Both groups were composed of couples classified either as "number and spacing planned" or "number planned."

For two reasons it seems undesirable for future studies to give equal importance to the two dependent variables. In the first place, with continuous spread of contraceptive practice within the United States it becomes decreasingly important to study prevalence and effectiveness of contraception within this country. (The writer is aware of the extreme urgency of studies of contraception and of broad social factors relating to it in the areas of high fertility.) In the second place, it is apparent that a broader universe of couples is needed for studying variations in the proportion of couples practicing contraception effectively than for studying the fertility of planned families. As already stated, the planned families are defined as those practicing contraception effectively.

3. Size and Character of the Sample

(a) The Indianapolis Study sample has frequently proved to be too small to afford good tests of the hypotheses considered. A reduction in scope of the study should make it possible to have not only better data but also larger samples.

The preceding discussion of studying both fertility-planning status and fertility is relevant here. If a study is concerned only with investigating the fertility of planned families [. . . it is not necessary to interview unplanned families and for a given expenditure a larger number of planned families can be included.]

(b) Despite the large number and diverse nature of the hypotheses in the Indianapolis Study, there was no variation, by hypothesis, in the basic eligibility requirements for couples in the Study. As a consequence, whereas the sampling scheme is admirably suited to some of the hypotheses, it is ill-suited to others. For example, one of the hypotheses is concerned with the relation of migration and rural-urban residence since marriage to fertility. Yet one of the requirements for eligibility in the Study was residence in a large city most of the time since marriage. The specific lessons to be learned here are that (1) the sampling scheme should be fitted to the hypotheses for study; (2) that the next efforts [should] be directed toward several small studies rather than toward one large study; and (3) that the relevance of such factors as migration to fertility can be studied more effectively with census data than with studies of the Indianapolis type which are expensive and of necessity based upon small numbers.

(c) The Indianapolis Study was restricted to couples having the following characteristics: husband and wife native white, Protestants, with at least a complete grammar-school education; married during 1927–1929; wife under 30 and husband under 40 at marriage; neither spouse previously married; and couple resided in a large city (25,000+) most of the time (8+ years) since marriage.

There are both advantages and disadvantages in having a homogeneous group for study. The advantage is that homogeneity of the type secured prevents the necessity of splintering the analysis by such factors as color, nativity, rural-urban status, age, etc.[29] The disadvantage is that the use of the homogeneous sample removes one from the actual conditions. It may be stated, however, that the use of the homogeneous sample is usually more justified in studies concerned with causal relationships than in studies designed to ascertain the frequency of given characteristics in the total population or in efforts to translate rates observed for the study sample to rates for the total community.

[29] Thus if a heterogeneous group is included the cost will be made larger by the necessity of introducing controls for the various groups added which means that it is necessary to have a larger sample or else to make numerous studies with each concentrating on specific variables.

Another disadvantage is that restriction to a homogeneous sample probably tends to narrow the range of variation of both the independent and dependent variables under consideration. This may be an important reason why the Indianapolis Study did not exhibit stronger relations between psychological variables and fertility. By restricting oneself to a highly homogeneous group like that in the Indianapolis Study and then making it further homogeneous by restriction to planned families and still more homogeneous by holding socio-economic status constant, one doubtless reduces very much the range of variations in both the psychological characteristics and the fertility of planned families. When one further considers that our measuses of psychological characteristics probably were too crude to afford precise differentiations, it may be little wonder that the Study failed to indicate strong and consistent relations of fertility behavior to psychological characteristics.

4. General Design of Study

(a) Perhaps closely related to the methodological problems inherent in the homogeneous sample are those inherent in the atomistic approach—i.e., the separate analysis of the variable under each hypothesis. In a very real way this approach necessitates the assumption that all other factors are equal when groups are classified on the basis of only one variable at a time. The atomistic approach neglects the sociological and psychological axiom that motivations are multiple and complex. It is true that some attempt has been made to investigate the simultaneous impact of several variables, (21, 25, 26) but the Study was structured and the results were analyzed largely in terms of twenty-three separate hypotheses.

(b) The attempt to study social and psychological factors affecting fertility by the actual collection of data at only one point in the married life (12–15 years after marriage), raises a variety of problems. First of all is the question of memory. To what extent can the person remember the details regarding, say, contraceptive practice since marriage, attitudes toward successive pregnancies, and attitudes of the past 12–15 years about a variety of other things? In the second place, the dependence on retrospective or *ex post facto* data frequently makes it difficult to differentiate between cause and effect. This

deficiency was illustrated particularly by the data regarding preference as to the sex of children, by the relation of economic security to fertility among "excess fertility" couples, and by the data on "economic tension."

(c) An indicated lesson of the previous condition is the need for a study that will utilize changes in time as the fundamental units of classification. A longitudinal study of some type is rather clearly indicated. If a study can "catch" couples before they are married or before they have a child of a given order, it has a good chance to overcome some of the problems associated with the use of retrospective data.

It is recognized that the orthodox longitudinal study is expensive in money and time. It is also acknowledged that the study itself may exert an influence on the fertility behavior of some of the members of the panel under study. Furthermore, past investigations have indicated that the "dropouts," i.e., those withdrawing from the study, are a selected group.[30] However, there are ways and means of at least partially overcoming some of the selective features of a longitudinal study. Students are experimenting with partially longitudinal studies in an effort to offset some of the objectionable features of the full-blown longitudinal study. One possibility is that of selecting several different cohorts and having a limited number of visits to all of these groups.

Application of "Lessons" in New Studies. Several studies of fertility have profited to some extent by the experience of the Indianapolis Study. Many of the questions and procedures developed for the Indianapolis Study were used in subsequent investigations in Puerto Rico, India, and the United States.[31]

[30] Downes, Jean: The Longitudinal Study of Families as a Method of Research. The Milbank Memorial Fund *Quarterly,* April, 1952, XXX, No. 2, pp. 101–118.

[31] *See:* Hatt, Paul K.: BACKGROUNDS OF HUMAN FERTILITY IN PUERTO RICO. Princeton, Princeton University Press, 1952, p. 512.

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A study, Growth of American Families, under the joint direction of P. K. Whelpton of the Scripps Foundation for Research in Population Problems, Miami University, and Ronald Freedman of the Department of Sociology, University of Michigan, and financed by grants from the Rockefeller Foundation and the Population Council, used some of the questions that were asked in the Indianapolis Study. For check purposes couples much like those in the Indianapolis Study with respect to nativity, color, religion, education, age, and duration of marriage, were classified by fertility-planning status according to similar rules. For this restricted group the results were much the same as those secured in Indianapolis. The Growth of American Families Study was based on interviews with a probability sample of all white wives in the United States who in 1955 were 18–39 years of age, and either living with husband, or separated because of his military service.[32]

One study in particular has been based upon the experience of the Indianapolis Study and in fact is frequently referred to as the successor to the Indianapolis Study. This is the Study of Social and Psychological Factors Affecting The Future Fertility of Two-Child Families. This study is being carried out under the technical direction of the Office of Population Research of Princeton University. It is sponsored by the Milbank Memorial Fund, with grants from the Carnegie Corporation of New York, The Population Council, and the Milbank Memorial Fund.[33]

The basic purpose of this study is to learn some of the social and psychological factors affecting the occurrence of and the

[32] Whelpton, P. K. and Freedman, Ronald: A Study of the Growth of American Families. *American Journal of Sociology,* May, 1956, lxi, No. 6, pp. 595–601. The main report FERTILITY PLANNING, STERILITY, AND POPULATION GROWTH by Ronald Freedman, P. K. Whelpton, and Arthur Campbell is scheduled for publication by McGraw-Hill early in 1959.

[33] For descriptions of the study *see* Westoff, C. F.; Mishler, E. G.; Potter, R. G.; and Kiser, C. V.: A New Study of American Fertility. *Eugenics Quarterly,* December, 1955, ii, No. 4, pp. 229–233.

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time required for third births among couples who recently had their second births. Instead of being restricted to highly homogenous couples in a single city, the new study purports to be representative of all native-white two-parity couples in seven of the eight metropolitan areas of the United States with a population of 2 million or more in 1950.[34] The study attempts to avoid the biases inherent in *ex post facto* data by collecting some of the basic data before the event of the pregnancy for the third child. It is partially longitudinal in design in that second visits will be made some two and a half years after the first visit. It is possible that additional visits will be made still later. It is hoped that by constant improvements in study design we may eventually have a "breakthrough" of new knowledge in the complex field of motivations regarding size of family.

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[34] The Boston metropolitan area was excluded because of difficulties in sampling that would have been encountered because of insufficient information in birth registration data.

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