SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

XXV. THE PREDICTION OF TOTAL FERTILITY[1]

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THE Indianapolis Study of Social and Psychological Factors Affecting Fertility, initiated in 1938, is now nearing completion. Twenty-four articles reporting the results and analyses of hypotheses have already been published with with only a few still to be reported. Most of these hypotheses, however, have been directed to an analysis of factors affecting the fertility of couples who had successfully *planned* the number and spacing of their children. There is little doubt that this is the problem which is of the greatest theoretical significance and the one that is especially pertinent if we make the not unreasonable assumption that birthrates in the future will come closer and closer to being reflections of the desire and will of couples about the number of children they want. However, this trend is far from being completed. Over half of the pregnancies to couples in the Indianapolis Study, for example, were conceived while contraception was being practiced[3] and this is a sample which one might expect on the basis of its characteristics[4] would overestimate the practice of contraception in the American married population at large.

[3] *See* Westoff, Charles F., Herrera, Lee F., and Whelpton, P. K.: Social and Psychological Factors Affecting Fertility. xx. The Use, Effectiveness, and Acceptability of Methods of Fertility Control. The Milbank Memorial Fund *Quarterly*, July, 1953, xxxi, No. 3, pp. 304–305 (Reprint pp. 898–899).

[4] The sample consists of a native-white, Protestant, urban population of a predominantly "middle-class" character.

Consequently, it is still important for demographic interests to review the data from the Indianapolis Study from the point of view of determining the limits of our present ability to predict *total* fertility, or more specifically in this case, the distribution of live births ever born to couples married from 12 to 15 years, a fairly reliable estimate of the eventual completed size of family. Our data relate, however, only to couples classified as "relatively fecund"[5] and, by definition, exclude couples classified as "relatively sterile."[6] This exclusion was necessary for various reasons but primarily because the same questions were not asked of the couples classified as "relatively sterile." Thus, our total fertility data in this article refer to the net result of planned and unplanned conceptions that resulted in live births and does not include any adjustment for sterility[7] which would be necessary in predictions[8] of the fertility of a general population.

As the title indicates, this article represents the first part of this work. The second part, which will follow in a subsequent issue, will be entitled "The Prediction of Planned Fertility" and will treat with the same statistical procedures the data relating to the size of families that were completely planned. This second article will be of greater theoretical relevance for the planning of new studies.

In addition to our prediction interests in these two articles,

[5] The "relatively fecund" group includes all couples reporting four or more live births. It also includes couples with three or fewer live births unless they knew or had good reason for believing that conception was physiologically impossible during a period of at least 24 or 36 consecutive months since marriage (24 if never pregnant, 36 if ever pregnant). Failure to conceive when contraception was not practiced "always" or "usually" during periods of the above durations was considered good reason for such belief.

[6] Couples were so classified who did not satisfy the above criteria of the "relatively fecund" classification.

[7] For estimates of the effect of sterility on the birthrate *see* Whelpton, P. K., and Kiser, Clyde V.: Social and Psychological Factors Affecting Fertility. viii. The Comparative Influence on Fertility of Contraception and Impairments of Fecundity. The Milbank Memorial Fund *Quarterly,* April, 1948, xxvi, No. 2, pp. 205–213 (Reprint pp. 326–334).

[8] Actually, when we use the term "prediction" in this study we are not referring to an estimate of the actual birth rate (although, by implication, this is ultimately involved) but rather an attempt to control statistically with other variables the maximum amount of the variance of fertility that is possible.

it is important, especially since plans for follow-up studies of fertility are being made, that we re-examine the Indianapolis data with the more refined analytical techniques that have become available since the Study was initiated. Any new studies that may develop will, of course, draw generously on the experience of the Indianapolis Study.

One of the characteristic features of the progress of the Indianapolis Study has been the practice of self-examination and self-criticism that its contributors have adopted. Criticisms have revolved around such matters as the lack of theoretical organization of hypotheses, the *ex post facto* nature of the Study design, the restrictive homogeneity of the sample, the failure of the Study to indicate the "baby boom" of the 1940s, etc. Two other criticisms are particularly pertinent here: that the level of prediction of fertility has been unduly low, and that a less atomistic approach to the data would be desirable. The first criticism is debatable. On the one hand it is true that analysis of some of the data with the techniques of partial and multiple regression[9] yielded a maximum control of the variance of fertility, for example, of around only 12 per cent.[10] On the other hand, expectations that social and psychological factors would be accurate predictors of discrete sets of events such as fertility represents, which events are subject to inclination and accident, are not realistic at all. Size of family is the net result of a highly complex set of factors and, at best, the Indianapolis Study should be viewed only as a narrow intersection of some of the pertinent variables. The criticism that the data have been approached "atomistically" derives from two arguments —that the individuals and couples who were interviewed were treated more as a series of traits, characteristics, and attitudes than as whole people, and secondly, that the data were analyzed hypothesis by hypothseis with little attempt at integra-

[9] Westoff, Charles F. and Kiser, Clyde V.: Social and Psychological Factors Affecting Fertility XXI. An Empirical Re-Examination and Intercorrelation of Selected Hypothesis Factors. The Milbank Memorial Fund *Quarterly*, October, 1953, xxxi, No. 4, pp. 421–435 (Reprint pp. 953–967).

[10] Ibid. p. 434 (Reprint p. 966). This figure refers only to planned fertility.

tion. The first criticism is valid and perhaps somewhat characteristic of statistical studies in this area in general; the latter objection has been met in part by the Westoff and Kiser article and in part by this work.

This paper and the one that will follow thus constitute another exploration of the Indianapolis Study data with the objectives of: (1) achieving the maximum prediction of fertility; (2) achieving greater integration of the results; and (3) testing the sensitivity of the data to more advanced techniques of statistical analysis. Two approaches are utilized—the Guttman cumulative scaling procedure with the H-technique improvement, and the Thurstone centroid method of factor analysis.

THE DATA AND SCALING APPLICATION

The data from the Indianapolis Study that were employed for this analysis are derived from the responses of the 860 "relatively fecund" wives[11] (the uninflated sample) to the social-psychological questions in the interview questionnaire, and information from other schedules on number of live births, fertility planning status, or the extent to which the couple effectively planned the number and spacing of births, and seven items relating to the socio-economic status of the couple. This intensive interview study was restricted to couples meeting the following eligibility requirements: husband and wife native white, both Protestant, married during 1927–1929, neither previously married, husband under 40 and wife under 30 at marriage, both completed at least the eighth grade, and residents of a large city most of the time since marriage.

The essential idea of "scaling" is quite simple. It involves an arrangement of items in the order of their "difficulty" of response. The classic example is in the measurement of the dimension of mathematical ability where three problems involving a knowledge of arithmetic, algebra, and calculus are presented. The more difficult require a knowledge of the more

[11] The analysis was restricted to wives largely for reasons of economy, in addition to the fact that previous work on the Indianapolis data did not indicate significant differences between wives and husbands in the relationships analyzed.

elementary. In the more complex field of measurement of attitudes, opinions, personality characteristics, and the like, the arrangement of items in terms of their face identification is not so simple. The problem is to achieve an ordering of items on a scale of "commitment" (substitute for "difficulty" in the illustration above), so that if we know an individual's rank on the scale we can successfully predict (say, a minimum of nine times out of ten on the average) his answers to all other items on the same scale dimension. The mathematical basis of scale theory and a general statement of procedure can be found in Vol. IV of the AMERICAN SOLDIER studies.[12] The modification of the general procedure outlined in this volume that is used in this analysis is called the H-cumulative technique. The theoretical basis of this improvement and a step-by-step illustration of the mechanical techniques involved can be found in a recent article in *The Public Opinion Quarterly*.[13] The essential innovation involved in this improvement is the development of a "contrived" item from a number of original questionnaire items.[14] Thus, instead of relying on single items for steps on the scale, clusters of items having similar response frequencies are formed. This technique has as one of its advantages the utilization of a large number of items, thus increasing confidence that the scale reflects a "real" dimension rather than the possibility, that is sometimes charged in criticisms of four- or five-item scales, that "they hold together merely because they have something highly specific . . . either in phrasing of content or in format. . . ."[15]

Briefly, the advantages of developing scales for data of this kind are: (1) That they will afford assurance that variables in which we are interested are being tapped in a reasonably

[12] *See* Stouffer, Samuel A., *et al.*: MEASUREMENT AND PREDICTION. Studies in Social Psychology in World War II, Vol. IV. Princeton, Princeton University Press, 1950. *See* especially Chap. 4.

[13] Stouffer, Samuel A.; Borgatta, Edgar F.; Hays, David G.; and Henry, Andrew F.: A Technique for Improving Cumulative Scales. *The Public Opinion Quarterly,* Summer, 1952, xiv, No. 2, pp. 273–291.

[14] Some slight modifications of the procedure of cumulative scaling that are introduced here are discussed in Appendix A.

[15] Ibid., p. 275.

stable form; (2) That considerable confidence may be attached to the unidimensionality of content among the various groups of items; and (3) That it inspires additional confidence in the face validity identification of the variables involved. If sets of questions are not purified into a single content area, or known content areas of known relationship, the sets of questions can hardly be used in a completely meaningful way, that is, they may be used for prediction but not necessarily for "understanding."[16]

In the original design of the Indianapolis Study, the individual questionnaire items were grouped for analysis under a number of specific substantive hypotheses. These items have been rearranged into new classifications for the purpose of deriving scales. The new arrangements frequently have cut across the original designations and have also left a number of items unclassified. Some of the smaller groupings of items have been omitted entirely because they did not provide a sufficient number of items for scaling. Thus, since the emphasis is on scaling, the procedure described in this paper should not be interpreted as a maximum utilization of all the available data. Only those data adaptable for scaling are incorporated. It is well to reiterate that this analysis grew out of an exercise testing the applicability of the Indianapolis data for scaling and that the data have not been re-examined for maximum prediction, except within the content of the scales.[17] In our opinion,

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[16] The utilization of scaling techniques has much in common with factor analysis and actually can be conceived as a rudimentary form of factor analysis in which the analyst makes sophisticated guesses concerning the operation of certain variables (possibly coincident with factors) and screens accordingly. If large numbers of items are to be utilized, the advantage of the scaling technique in its speed of application may be of greater importance than the loss of control over some of the variance. Similarly, the method of grouping items by common sense (face validity) may enable the researcher to arrive more quickly at the required sets of variables without the severe problem of content identification sometimes accompanying factor analysis.

[17] It should be remembered, thus, that two types of data loss are built into this present analysis: (1) loss by omission of items not classifiable in terms of content; and (2) loss by omission of small sets of questions. A third type of loss is inherent in the procedure. The building of cumulative scales maximizes the common content of the questions and treats non-common content as error variance. Thus, if our present concern were one of maximum prediction we would have discarded a considerable part of our data by utilizing this technique.

however, it is highly improbable that any further manipulation of the data will result in predictions significantly higher than those resulting from this work and from the prior analysis of Westoff and Kiser.[18]

In our rearrangement of questions we established the following classifications with the following designations:

1. Stated sensitivity to inducements to having more children. Nine questions included, nine questions used in a scale.

2. Assessment of conditions during most of married life. Twelve questions included, nine questions used in a scale.

3. Liking for children. Thirteen questions included, nine questions used in a scale.

4. Felt restriction of personal freedom, non-economic. Ten questions included, nine questions used in a scale.

5. Happiness of family and childhood situations. Eight questions included, six questions used in a scale.

6. Adherence to traditions. Seventeen questions included, six questions used in a scale (6a) which relates specifically to traditional perceptions of women's behavior, and nine questions used in a scale (6b) regarding perceptions of traditional values about marriage and family.

7. Interest in religion. Nine questions included, nine questions used in a scale.

8. Feelings of personal inadequacy, self and husband. Twenty-two questions included, nine questions used in a scale (8a) with self reference, and six questions used in a scale (8b) with husband reference. (i.e., wife's perception of husband.)

9. Tendency to perceive factors as deterrents to having children. Eleven questions included, six questions used in a scale.

10. Tendency to plan in general. Seven questions included, six questions used in a scale.

11. Ego satisfaction as a motive for having children. This scale was not attempted since the complete sample would have been available on only two questions. A scale might have been available for the sample in which the majority of questions would have been pertinent, but our concern here was only with the scales pertinent to the entire sample.

[18] *Op. cit.*

12. Felt dominance of husband or wife (by wife responses). This scale was not attempted since the distribution of responses was such that scales of the cumulative type either could not be expected, or would discriminate only one or two very extreme

Table 1.   The distribution of wives by scale-type classification for eight cumulative scales (H-technique) developed from three contrived item scales[1] (Table 1a) and for five cumulative scales (H-technique) developed from two contrived item scales[2] (Table 1b) (N = 860).

Table 1a

Scale Type Classification[3]	Contrived Item			Scale Identification Code[2]							
	1	2	3	1	2	3	4	6b	7	8a	13
1[4]	+	+	+	144	137	135	202	104	156	115	329
2	+	+	−	365	292	192	250	264	290	285	220
(2)	+	−	+	6	22	42	22	51	9	24	33
3	+	−	−	114	213	268	202	301	258	247	114
(1)	−	+	+	1	10	12	8	22	3	8	8
(3)	−	+	−	15	54	35	56	47	17	49	41
(4)	−	−	+	1	9	8	5	11	2	11	8
4	−	−	−	214	122	168	115	60	125	121	107
Number of "Errors"				23	96	97	91	131	31	92	90
Coefficient of Reproducibility				.991	.963	.962	.965	.949	.988	.964	.965

Table 1b

Scale Type Classification[3]	Contrived Item		Scale Identification Code[2]				
	1	2	5	6a	8b	9	10
1[4]	+	+	185	263	167	509	197
2	+	−	484	436	564	215	445
(2)	−	+	15	4	21	19	25
3	−	−	176	157	108	120	193
Number of "Errors"			15	4	21	19	25
Coefficient of Reproducibility			.991	.998	.988	.989	.986

[1] For the original questions included in the contrived items and the identification of a positive response in an original item, *see* Appendix B.   Two positive or three positive responses to the three questions of a contrived item were considered a positive response to the contrived item.

[2] *See* text for substantive identification.

[3] Non-scale response patterns are indicated by parentheses.   These were classified by minimum error or middle-class assignment, whichever applied.

[4] A classification of 1 had the following meanings: Scale (1): most sensitive to inducements to having more children; Scale (2): favorable assessment of conditions during most of married life; Scale (3): most liking for children; Scale (4): least felt restriction of freedom, non-economic; Scale (5): happy family and childhood situations; Scale (6a): most adherence to traditional belief that females should be restricted; Scale (6b): most adherence to selected traditional beliefs; Scale (7): most interested in religion; Scale (8a): least feelings of personal inadequacy of self; Scale (8b): least feelings of personal inadequacy of husband; Scale (9): tendency not to perceive factors as deterrents to having children; Scale (10): tendency not to plan in general; Scale (13): least dissatisfaction with husband.

groups. Further, preliminary screening of the items indicated negligible intercorrelations.

13. Dissatisfaction with husband. Thirteen questions included, nine questions used in a scale.

The original questionnaire items that were utilized for each of the scales that were used are reproduced (with response frequencies) in Appendix B. The distribution of wives by scale-type classification for the thirteen scales that were derived appears in Table 1.

When this analysis was first conceived, attention was focussed primarily on these attitudinal, or as they were loosely termed, the "psychological" variables. When this early work on the derivation of scales for these data had been completed and after the Westoff-Kiser analysis had been reported, it was decided to include measures of socio-economic status (SES) in this analysis. The Westoff-Kiser analysis had confirmed what had been reported previously by individuals doing research on the different hypotheses of the Indianapolis Study, that the relationships between SES and the fertility variables were the highest to be found in the data, and that what slight associations between the psychological variables and fertility behavior that were observed were consistently and substantially diminished when SES was controlled. The one chief exception to this pattern was the variable identified as "feeling of economic security" which, at the conceptual level, can be interpreted as a perceptual reflection of SES. This variable is partially represented in scale form (No. 2) in this current analysis as "assessment of conditions during most of married life."[19]

The intercorrelation of these scales and the SES items, and fertility planning and fertility are presented in Table 2. It should be reemphasized that "fertility" refers to *total* fertility here and not only to *planned* fertility as in many of the previ-

[19] This scale also contains some items that were included in the measurement of "feeling of economic tension" in the original Indianapolis Study listing of hypotheses. *See* Riemer, Ruth and Kiser, Clyde V. Social and Psychological Factors Affecting Fertility. xxiii. Economic Tension and Social Mobility in Relation to Fertility Planning and Size of Planned Family. The Milbank Memorial Fund *Quarterly*, April, 1954, xxxii, No. 2, pp. 167–231 (Reprint pp. 1005–1068).

Table 2. The intercorrelations* of fertility planning, fertility, thirteen attitudinal scales, and seven socio-economic variables.

VARIABLE IDENTIFICATION CODE**

	FP	F	1	2	3	4	5	6a	6b	7	8a	8b	9	10	13	14	15	16	17	18	19	20
FP	X	.62	.01	.16	.05	.13	.07	.07	.05	.06	.20	.10	.06	.13	.11	.26	.19	.22	.28	.36	.27	.34
F		X	.06	.16	-.10	.09	.03	.10	.09	.16	.14	.00	-.04	.11	.11	.25	.17	.24	.25	.37	.23	.37
1			X	.19	-.09	.27	.13	-.08	-.15	-.04	.11	.04	.09	-.08	.09	.14	.11	.18	.11	.10	.16	.14
2				X	.04	.15	.10	.03	.03	-.01	.33	.10	.07	.23	.14	.19	.22	.28	.39	.33	.46	.38
3					X	.20	.14	-.08	-.10	-.22	.18	.08	.37	.18	.19	.06	.05	.04	.00	.08	.03	.05
4						X	.15	-.04	.02	-.04	.25	.13	.41	.16	.24	-.02	.01	.02	.07	.02	.01	-.01
5							X	-.07	.09	-.11	.18	.04	.15	.14	.11	.22	.14	.06	.07	.10	.11	.14
6a								X	-.16	-.07	.00	-.04	.00	-.01	.06	.09	.11	.05	.12	.15	.12	.15
6b									X	-.12	.07	-.05	.03	.00	-.05	.25	.08	.11	.02	.12	.04	.09
7										X	-.04	-.06	-.03	.11	-.05	.01	.03	.08	.04	.11	.06	.06
8a											X	.34	.17	.29	.34	.19	.14	.17	.15	.19	.19	.19
8b												X	-.12	.16	.20	.01	.09	.07	.04	.07	.07	.01
9													X	.10	.26	.06	.09	.07	.00	.10	.05	.02
10														X	.18	.16	.12	.14	.29	.19	.18	.22
13															X	.06	.07	.01	.11	.09	.10	.11
14																X	.45	.30	.30	.46	.37	.47
15																	X	.33	.29	.45	.44	.45
16																		X	.32	.43	.43	.41
17																			X	.51	.54	.69
18																				X	.61	.69
19																					X	.67
20																						X

* N = 669 (the highest number of known scores on all variables). These coefficients were calculated by the Pearsonian product-moment formula. A coefficient of approximately ±.12 is required for a statistically significant departure from zero at the 1 per cent level of probability and one of approximately ±.09 at the 5 per cent level according to R. A. Fisher's *t* formula.

** Code identification; the meaning and correlated direction of the variables: (note that variables 1, 6a, 6b, 7, and 10 appear with sign meanings opposite from those in Table 1).

FP. Effective fertility planning.
F. Low Fertility.
1. Low sensitivity to inducements to have more children.
2. Favorable assessment of conditions during most of married life.
3. Most liking for children.
4. Low felt restriction of personal freedom (non-economic).
5. High assessment of childhood.
6a. Low adherence to traditional belief that females should be restricted.
6b. Low adherence to selected traditional beliefs.
7. Low interest in religion.
8a. Least feelings of personal inadequacy of self.

8b. Least feelings of personal inadequacy of husband.
9. Least perception of factors as deterrents to having children.
10. High tendency to plan in general.
13. High satisfaction with husband.
14. High education of wife.
15. High education of husband.
16. High occupational class.
17. High net worth.
18. High rating on Chapin's Social Status Scale.
19. High average annual earnings of husband.
20. High monthly rent or rental value of home at interview.

ous reports and in the second article that will follow from this work.

The predictive values of the individual scales are evident in Table 2. Aside from the *relatively* high values for the SES items, the highest predictive value observed for effective fertility planning from the scales is .16 (Scale 2: Assessment of conditions during most of married life) and for low fertility also .16 for the same scale and for interest in religion (Scale 7). On the basis of this observation which indicated that none of the scale variables were strongly related to fertility planning or fertility, the scales were dichotomized and ordered in direction of correlation to see how much they were jointly related to fertility. The score assigned to each wife was the simple sum of the one and zero values derived from the scale dichotomies. This score was correlated with fertility and the magnitude of the correlation was .32, indicating that approximately 10 per cent of the variance of fertility could be accounted for by this procedure. Actually, in terms of pure mechanical prediction, the best prediction we have of fertility in this study is obviously the extent to which fertility is planned. The correlation of these two variables is .62 (between low fertility and effective planning) indicating an approximate control of close to 38 per cent of the variance. This relationship, however, is of little significance for our theoretical concerns about the social-psychological antecedents of size of family.

THE FACTOR ANALYSIS

The method of factor analysis was chosen as the technique most useful for introducing some order into the large number of variables that were analyzed. Factor analysis, in general, facilitates consideration of the number and nature of the factors operating among a series of intercorrelated variables, their degree of interaction, and the magnitude of their influence.[20] In short, it aims at accounting for the relationships among a large group of variables (here we have 22 variables with 231

[20] Cattell, Raymond B.: FACTOR ANALYSIS: AN INTRODUCTION AND MANUAL FOR THE PSYCHOLOGIST AND SOCIAL SCIENTIST. New York, Harper and Brothers, 1952, pp. 20–21.

intercorrelations), by a smaller number of variables, or common factors. Actually, in this particular study we are primarily interested in isolating the factors associated with fertility and fertility planning, and are only secondarily interested in identifying the factors underlying the relationships of our other variables. Accordingly, our attention will be directed mainly toward the factors in which fertility and fertility planning are the most heavily loaded.

The factor analysis was done by the complete centroid

Table 3.   The rotated[1] factor matrix.

IDENTIFICA-TION CODE	VARIABLE	ROTATED FACTORS					
		I	II	III	IV	V	Commu-nality
FP.	Effective Fertility Planning	.40	−.04	.01	.61	.08	.54
F.	Low Fertility	.38	.08	−.10	.67	.00	.61
1.	Low Sensitivity to Inducements to Fertility	.18	−.21	−.34	−.06	−.07	.20
2.	Favorable Assessment of Conditions	.47	−.26	.04	−.03	−.27	.36
3.	Most Liking for Children	.06	−.40	.11	−.11	.24	.25
4.	Low Felt Restriction	−.04	−.57	−.36	.10	−.06	.47
5.	High Assessment of Childhood	.17	−.28	.00	−.05	.24	.17
6a.	Low Adherence to Tradition	.14	.10	−.21	.10	−.09	.09
6b.	Low Adherence to Tradition	.17	.04	−.28	.05	.14	.13
7.	Low Interest in Religion	.08	.22	−.26	.15	−.14	.17
8a.	Least Feeling of Personal Inadequacy (Self)	.26	−.54	.18	.19	−.07	.43
8b.	Least Feeling of Personal Inadequacy (Husband)	.07	−.36	.19	.11	−.04	.18
9.	Least Perception of Deterrents to Fertility	.06	−.51	−.29	−.05	.18	.38
10.	High Tendency to Plan in General	.28	−.35	.19	.05	−.06	.24
13.	High Satisfaction with Husband	.10	−.46	.04	.20	−.08	.27
14.	High Education of Wife	.59	−.02	−.05	.06	.36	.49
15.	High Education of Husband	.58	−.03	−.01	−.03	.19	.38
16.	High Occupational Class	.55	−.04	−.10	−.01	.02	.31
17.	High Net Worth	.67	−.04	.04	.04	−.31	.55
18.	High Rating on Chapin's Scale	.80	.02	−.06	.08	.01	.65
19.	High Average Annual Earnings of Husband	.75	−.03	.01	−.09	−.20	.62
20.	Rent at Interview	.85	.04	.02	.03	−.15	.75

[1] The factor matrix before rotation appears in Appendix C.

method as outlined by Thurstone.[21] Five factors were found, the fifth being somewhat questionable. When a strong first factor was observed to group a large number of the variables and the two variables of fertility planning and fertility were perceived to be similarly located in this factor, it was decided to rotate the remaining variance of these two variables into a single factor.[22] The factor matrix after rotation appears in Table 3 (the unrotated factor matrix is reproduced in Appendix C).

Looking first at Factor I, we observe that fertility planning and fertility have high loadings as compared to their weight in all the remaining factors with the exception of Factor IV. Looking at the loading of other variables in Factor I, we find that such variables as rent, rating on Chapin's Social Status Scale, income, net worth, education, and occupation all show high loadings, ranging from .85 to .55. The "assessment of conditions" scale (measuring lack of economic tension) and feeling of economic security also correlates well with Factor I, at the level of .47. Tendency to plan in general, and feelings of personal adequacy also show some loadings in Factor I, though to a much lesser extent. Without doubt, we can identify Factor I as the well-known "socio-economic" factor. The stylization of living which a given socio-economic position permits or encourages is probably most sensitively reflected by the type and quality of the home or apartment one lives in, a fairly reliable index of which can be derived from the rental value of the home or the actual rent paid for the apartment. Similarly, Chapin's Social Status Scale is an index of social status based on the condition and furnishings of the living room. These two variables, it will be noted, have the highest loadings in Factor I and the highest correlations with fertility planning and fertility (*see* Table 2).[23] Thus, "material style of life" might be a

[21] Thurstone, L. L.: MULTIPLE FACTOR ANALYSIS. Illinois, The University of Chicago Press, 1947.
[22] This, in fact, was one of the most likely rotations, even though it was determined primarily by these two variables.
[23] No cause-effect sequences are postulated here since it seems clear that the

more appropriate identification of Factor I than simply the "socio-economic" factor.

As was noted above, the residual variance of fertility planning and fertility was rotated into a single factor and appears in Factor IV. What this means in somewhat different terms is that the variance of fertility planning and fertility that is not accounted for by the socio-economic factor was isolated in an attempt to determine which other variables could be identified as being related to this non-socio-economic variance. Our attempt was largely unsuccessful, a conclusion which can be readily confirmed by glancing at the other factor loadings in Factor IV. This is particularly serious because effective fertility planning and low fertility exhibit their highest loadings (.61 and .67) in this factor. The fact that Factor IV is determined primarily by these two variables indicates that this factor accounts for the interrelationship of these two variables. However, since Factor IV also accounts for the remainder of the common variance of these two variables, it indicates how good other variables are as predictors of Factor IV which is defined. The only other variables that show any slight positive association with this factor are high satisfaction with spouse, high feelings of adequacy, and low interest in religion. Although we are obviously on *extremely* tenuous grounds in trying to infer the common content of this factor from these low correlations we can suggest very tentatively that the factor may be the "successful-rational-modern family" dimension. The theoretical speculations about the declining birthrate in Western civilization have included this particular factor in terms of the small-family type emerging in an urban, mobility-oriented culture which stressed modern, rational companionate marriage. With respect to these data, however, we cannot emphasize too strongly that this is at best an extremely tentative suggestion about the meaning of Factor IV. It must be stressed that the variables that show these slight relationships with Factor IV

condition of one's living room, for example (involved in Chapin's Social Status Scale) can be related to fertility in both directions.

only contribute about 1 to 2 per cent control of the variance of this factor and it is evident that they exhibit considerably heavier loadings in Factor II which does not include significant loadings of fertility planning and fertility. The net conclusion we can draw from these observations is that a good test of Factor IV is simply not available in these data. This conclusion has significant implications for the planning of new research in this field.

As was noted earlier, we are not primarily concerned here with the identification of the factors accounting for the common variance of the intercorrelations among the variables outside of fertility planning and fertility, except as they might serve to purify tests of Factors I and IV in which these two variables are loaded. The variables that appear to be significant and operating jointly in Factor II are feelings of inadequacy, high felt restriction on pleasure as a result of children, high perception of deterrents to having more children, dissatisfaction with spouse, dislike of children, and a tendency not to plan in general.[24] These variables all show loadings of over .35 and extend to .57. We can generalize that the common factor in these relationships may be a "personal-family adjustment" dimension.

Factor III does not contain any particularly high loadings of any of the variables included in the analysis. The variables that do manifest some association are high-felt restriction due to children, a high sensitivity to (economic) inducements to having more children, a high adherence to traditions, a high interest in religion, feelings of personal adequacy, a tendency to plan in general, and a liking for children. Although the meaning of this factor is by no means clear, it may suggest the presence of a "conformity-tradition" factor.

The last factor, Factor V, is not clearly defined at all, and

[24] Throughout this discussion we have usually been describing our statistical results in terms of one end of the scale, e.g., in this specific context we mention *dis*like of children instead of a scale on "liking for children." This is simply an attempt to make the discussion as concrete as possible and is completely arbitrary. We could just as correctly refer to liking for children.

we will not venture an interpretation of it. However, it does possess some interesting properties. The outstanding feature of this factor is the positive loadings on education (.36 and .19 for education of wife and husband respectively) and the negative loadings on three of the other socio-economic variables, namely, net worth (– .31), income (– .20), and rent (– .15) and on the "assessment of (economic) conditions" (– .27). It also evidences small positive relationships with liking for children (.24) and favorable assessment of childhood situations (.24).

CONCLUSIONS

Returning to our primary interest in this first article—the prediction of total fertility and fertility planning—we note from Table 3 that the communality (h^2) of these two variables is .61 for fertility and .54 for fertility planning. This means that our five factors account for 61 and 54 per cent respectively of the total variance of these two variables. However, we observed that the highest loading of these two variables occurs in Factor IV, which accounts for 45 and 37 per cent of the total fertility and fertility planning variance itself. These data, we noted, contain no good test of Factor IV since our other variables contribute little or no association with this factor. Thus, we arrive at the conclusion that although the Indianapolis data permit a control of the variance of fertility of 61 per cent, roughly two-thirds of this control is located in the variance of fertility planning (and vice versa).[25] The other one-third of the controlled variance is located in Factor I, which is due to the socio-economic variables. Consequently, we conclude that the best prediction in the Indianapolis Study of fertility and fertility planning from variables other than themselves will be a prediction from the socio-economic variables of approximately 14 to 16 per cent of the variance (the squares of their

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[25] The question of *post factum* rationalization is pertinent here and may account for some of the interrelation of the two variables. There is probably a tendency for couples to report that a child was wanted after conception occurred. In addition, there is some slight lack of independence between fertility and fertility-planning status in terms of the criteria and definition of the latter concept, but this is not a serious problem.

loadings in Factor I). This is virtually the same conclusion reached by Westoff and Kiser in their previous analysis[26] of fertility planning and *planned* fertility.

SUMMARY

This is the first of two articles on the prediction of fertility. This first paper has analyzed the Indianapolis Study data for its capacity to predict total fertility; the next paper will treat the prediction of planned fertility. This study originated in a desire by people connected with the Indianapolis Study to re-submit the data of the Study to an analysis which would utilize some of the advanced statistical techniques which have been developed since the Study was done and, with the advantages of the hindsight afforded by the individual hypothesis reports, to attempt to integrate the diverse findings into a single meaningful whole.

Two basic approaches to the data were utilized. The Guttman cumulative scaling procedure (with the H-technique improvement) was relied on to develop scales from the attitudinal data. Thirteen scales were derived. Factor analysis was then employed in an attempt to differentiate and define the factors present in the interrelation of these scales and the socioeconomic variables with fertility and fertility planning.

Five factors were found after rotation, only two of which are especially significant for fertility. The first factor (Factor I) was clearly the "material style of life" or "socio-economic" factor. The other factor (Factor IV) which included the larger proportion of the controlled variance of fertility was not at all well defined. The high loading of fertility that was observed in this factor is due mainly to a similar loading of fertility planning. In strictly predictive terms this just reiterates existing knowledge to the effect that if one knows the contraceptive and fertility-planning habits of a population one can predict a significant proportion (over 36 per cent in this Study) of the variation in the actual fertility of that population. If one has

[26] *Op. cit.*

information on both socio-economic status and fertility-planning status, that prediction can be increased to 59 per cent of the variance of fertility. There were some other very low loadings in Factor IV of a meaningful group of other variables which tempted us to suggest an identification of this factor as the "successful-rational-modern family" dimension.

APPENDIX A

Several minor modifications of the H-cumulative scaling technique have been introduced in this work and should be noted. First, the preliminary item analysis utilized in the screening of questions for selection for the cumulative scales was abbreviated. Items were arbitrarily dichotomized (at the median where possible) and, on the expected order of correlation, a provisional scale score was given.

A second modification introduced in this scaling procedure is the acceptance of only odd numbers of items (three in particular) in the building of contrived items. Thus, even though the correlation of an item on the provisional scale was low and two other items exhibited high correlations with the provisional scale, the contrived item would be built with the three items rather than the two. The logical justification for this is somewhat complex but essentially involves the notion that a zero correlation item does not reduce the discriminatory capacity of the contrived item in this dimension but allows a more convenient allocation of the pattern of the responses to the original questions in the contrived item. In all cases here, a contrived item called positive is positive in a minimum of two of the original three questions utilized to define the contrived item. The description "positive," of course, refers only to the direction of the responses, which is completely arbitrary in any given set of scale computations.

A third modification in this treatment is the acceptance of scales (two-item scales) for which a latent structure[27] cannot be computed. The smallest number of items for which a latent structure may be estimated (except for the special case of a one-parameter scale) is three (utilizing a two-parameter model). However, it is possible to examine the distribution of scale types observed in the two-item case against the random distribution which may be gen-

[27] *See* Chapter 4 of MEASUREMENT AND PREDICTION, *op. cit.*

erated from the positive frequency of the two items. Further, if necessary, a factor analysis of the six original questions (comprising the two contrived items) could demonstrate the presence of a common factor. If this common factor is significantly located in the two original questions in each of the two contrived items, it can be demonstrated that the effect of computing an H-technique scale is to emphasize the common factor and to treat the non-common factors as error variance. If, however, the intercorrelations of the items were reasonable to start, it would be expected that the common factor would be present in all six original questions, and the minimum demonstration of content homogeneity in the two-item H-technique scale would be relatively simple. Once a scale was computed, the assignment of scale types was according to the procedure discussed in a recent article.[28]

Appendix B

The following list contains the specific items that were included in each of the scales derived. Next to each response category will be found the percentage of wives giving that response (occasionally the rounded percentages do not total 100 exactly). The brackets and signs indicate the cutting points and the assignment of positive and negative responses. The number in parenthesis at the right of each item indicates the contrived item in which each was included.[29]

Scale 1. Stated sensitivity to inducements to having more children.

Most people think that families might have been larger in recent years if living conditions, wage scales, and other matters had been different.

How much would you have been encouraged to have more children if the following things had been true during your married life? In answering each part of this question pay no attention to how you answer the other parts.

[28] Borgatta, Edgar F. and Hays, David G.: Some Limitations on the Arbitrary Classification of Non-Scale Response Patterns in a Guttman Scale. *The Public Opinion Quarterly,* Fall, 1952, xvi, No. 3.

[29] The questions utilized in the original Indianapolis Study questionnaires had two forms; one designed for couples with children and the other for childless couples. Here we have combined all respondents and ignored the differences in wording which are presumably insignificant.

There is a small amount of duplication of questions in a few of the scales. This has no serious theoretical or statistical consequences.

If you could rent a larger house at no additional cost as the size of your family increased.

Per Cent

+ {
15 Encouraged Very Much
10 Much
27 Some (2)
}
− 12 Little
36 Very Little

If fathers were given extra pay for each child in their family, beginning with $15 more a month for one child and rising $100 more a month for five children.

Per Cent

+ {
26 Encouraged Very Much
14 Much
26 Some (2)
}
− 10 Little
24 Very Little

If it would be just as cheap for children to go to high school and college as to grade school.

Per Cent

+ {
36 Encouraged Very Much
15 Much
20 Some (1)
}
− 8 Little
20 Very Little

If your doctor and dentist could give children adequate care at 25¢ per week per family.

Per Cent

+ {
32 Encouraged Very Much
14 Much
19 Some (1)
}
− 10 Little
23 Very Little

If there were visiting nurses from the schools who would take care of your children when they were sick in bed.

Per Cent

+ {
20 Encouraged Very Much
10 Much
23 Some (2)
}
− 13 Little
33 Very Little

If there were nurseries organized by the schools where mothers could leave their children when they wanted to go out during the day.

Per Cent

+ {
17 Encouraged Very Much
8 Much
}
− 25 Some (3)
13 Little
37 Very Little

If mothers were paid a wage for rearing children, beginning with $15 a month for one child and rising to $100 a month for five children.

Per Cent

+ {
16 Encouraged Very Much
9 Much
}
− 22 Some (3)
13 Little
41 Very Little

Every couple has reasons for not having more children. The following are some reasons which are given frequently.

How much has each of these reasons discouraged you and your husband from having more children?

The cost of having and raising children.

Per Cent

- *32* Discouraged Very Much
  25 Much
  26 Some   (3)
+{ 9 Little
   7 Very Little or Not at All

Not being sure of having a steady income.

Per Cent

- *14* Discouraged Very Much
   9 Much
  {24 Some   (1)
+ {16 Little
  {36 Very Little or Not at All

Scale 2. Assessment of conditions during most of married life.

Think back over the twelve to fifteen years that you have been married. Then answer the parts of this question so that they will show how things have been DURING MOST OF YOUR MARRIED LIFE.

Have you had as much to spend as most of your friends?

Per Cent

- *8* We Have Had Much Less
  32 Somewhat Less
  {46 Same   (2)
+{13 Somewhat More
  { 0 Much More

How much more income would you have needed in order to live in a way that would have been satisfactory to you?

Per Cent

- *8* Very Much
  24 Much
  44 Some   (3)
+ {14 Little
   { 9 Very Little

How much financial help could you expect from relatives in case of an emergency in your family?

Per Cent

- *15* Definitely None
  22 Probably None
  33 Little   (3)
+ {27 Fair Amount
   { 3 Large Amount

How much of the time have you been faced with the possibility that your husband might have a large pay cut or be out of a job for several months?

Per Cent

- *2* Nearly All of the Time
  10 Much of the Time
  32 Some of the Time   (2)
+ {23 Seldom
  {32 Very Seldom

Have you felt satisfied with most of the houses in which you have lived?

Per Cent

-   *5* Very Dissatisfied
  15 Somewhat Dissatisfied
  7 Neither Satisfied nor Dissatisfied   (1)
+ {*53* Fairly Satisfied
  {*20* Very Satisfied

Have your living conditions been better or poorer than those of your parents while you were growing up (6–16 years old)?

Per Cent

-   *1* Ours Have Been Much Poorer
  10 Somewhat Poorer
  18 Same   (3)
  42 Somewhat Better
+ {*28* Much Better

How sure do you feel that you will be able to meet family expenses during the next five years?

Per Cent

-   *2* Very Doubtful
  7 Rather Doubtful
  34 Undecided   (2)
+ {*53* Reasonably Sure
  { *3* Very Sure

SCALE 3. Liking for children.

Do you like to play with, read, or talk to children?

Has the family income been so small that you have had to deny yourself many things you wanted?

Per Cent

-   *14* A Great Many Things
  14 Many
  {*36* Some   (1)
+ {*20* Few
  {*14* Very Few

How interested have you been in having a car (or a better car)?

Per Cent

  {*22* Very Little
+ {*18* Little
  {*33* Some   (1)
-   *14* Much
  13 Very Much

How does the fun you get compare with the trouble when children of your neighbors or friends come in and make themselves at home?

Per Cent
- 2 Very Little
  3 Little
  29 Some   (2)
+ {23 Much
  {43 Very Much

Per Cent
- 4 Much More Trouble than Fun
  8 Some More Trouble than Fun
  31 As Much Trouble as Fun   (3)
  36 Some More Fun than Trouble
+ {19 Much More Fun than Trouble

Do you get tired of hearing the constant questions children ask?

Frequently children get so wrapped up in their play that they forget there is anyone around. Do you find it fun just to watch them then and see what they do and say?

Per Cent
- 1 Very Tired
  13 Rather Tired
  6 Indifferent   (3)
  49 Rather Interested
+ {31 Very Interested

Per Cent
- 1 Very Little Fun
  1 Little
  7 Some   (1)
  13 Much
+ {78 Very Much

Do you get as much "kick" from the things children say as from those grownups say?

How much are you interested in hearing other people talk about their children?

Per Cent
- 1 Much Less from Children
  1 Less
  10 Neither More nor Less   (2)
  48 More
+ {40 Much More

Per Cent
- 4 Very Little
  6 Little
  32 Some   (3)
  27 Much
+ {31 Very Much

How do you feel about seeing children's pictures in ads, store windows, etc.?

Per Cent
- 0 Annoyed or Bored
  3 Not Interested
  11 Slightly Interested   (2)
  30 Rather Like
+ {55 Like Very Much

Couples have various reasons for wanting each of their children. The reasons mentioned most frequently are given below.

How much did each of these reasons encourage you and your husband to have your last child?

A strong liking for children.

Per Cent

```
  –   9 Encouraged Very Little
      6 Little
     19 Some                          (1)
  + ⎰21 Much
     ⎱38 Very Much
```

Every couple has reasons for not having more children. The following are some reasons which are given frequently.

How much has each of these reasons discouraged you and your husband from having more children?

Not being more interested in children.

Per Cent

```
  –   1 Discouraged Very Much
      2 Much
     11 Some                          (1)
     20 Little
  + {65 Very Little or Not at All
```

SCALE 4. Felt restriction of personal freedom, non-economic.

Since your first child was born, how much *more time* would you have *liked to have* for:

Going to movies?

Per Cent

```
  –   2 Very Much More Time
      3 Much
     24 Some                  (1)
  + ⎰25 Little
     ⎱46 Very Little
```

Taking trips to visit friends, relatives, and interesting places?

Entertaining friends?

Per Cent

```
  –   5 Very Much More Time
      9 Much
     36 Some                  (3)
     21 Little
  + {29 Very Little
```

Reading, resting, radio-listening, etc.?

Per Cent

- − *7* Very Much More Time
- *9* Much
- *31* Some   (3)
- *22* Little
- + {*31* Very Little

Per Cent

- − *12* Very Much More Time
- *12* Much
- + { *34* Some   (1)
  18 Little
  23 Very Little

Going to clubs, lodges, meetings, dances, parties, etc.?

How much has it bothered you to be tied down by your children?

Per Cent

- − *1* Very Much More Time
- *3* Much
- *18* Some   (2)
- *21* Little
- + {*56* Very Little

Per Cent

- − *1* Very Much
- *2* Much
- *16* Some   (2)
- *21* Little
- + {*60* Very Little

Most people think that families might have been larger in recent years if living conditions, wage scales, and other matters had been different.

How much would you have been encouraged to have more children if the following things had been true during your married life? In answering each part of this question pay no attention to how you answer the other parts.

If there were nurseries organized by the schools where mothers could leave their children when they wanted to go out during the day.

If there were visiting nurses from the schools who would help take care of your children when they were sick in bed.

Per Cent

- − *17* Encouraged Very Much
- *8* Much
- + { *25* Some   (1)
  13 Little
  37 Very Little

Per Cent

- − *20* Encouraged Very Much
- *10* Much
- *23* Some   (3)
- *13* Little
- + {*33* Very Little

Every couple has reasons for not having more children. The following are some of the reasons which are given frequently.

How much has each of these reasons discouraged you and your husband from having more children?

Not wanting to be tied down more by children.

Per Cent
-   *2* Discouraged Very Much
    4 Much
  18 Some   (2)
  19 Little
+ {*56* Very Little or Not at All

SCALE 5. Happiness of family and childhood situations.

How happy was your child-
hood on the whole?

Per Cent
-   *4* Very Unhappy
  4 Unhappy
  15 Neither Happy nor
     Unhappy   (2)
  55 Happy
+ {*23* Very Happy

How happy were your parents in
their family life?

Per Cent
-   *3* Very Unhappy
  7 Unhappy
  19 Neither Happy nor Un-
     happy   (1)
+ ʃ*51* Happy
  {*19* Very Happy

How did the living conditions
of your parents compare with
those of your neighbors while
you were growing up (6–16
years old)?

Per Cent
-   *1* Much Poorer than the
     Neighbors
  6 Poorer
  76 About the Same   (2)
+ ʃ*14* Better
  { *3* Much Better

Do you think the number of
children your parents had was
much of a financial hardship
for them?

Per Cent
- *10* Very Much
  7 Much
  39 Some   (2)
+ ʃ*19* Little
  {*25* Very Little

Aside from money worries did
your parents have much trou-
ble in bringing up their chil-
dren, for example, health, chil-
dren getting into difficulties,
etc.?

Per Cent
-   *1* Very Much
  2 Much
  11 Some   (1)
  17 Little
+ {*68* Very Little

Every couple has reasons for not having more children. The following are some reasons which are given frequently. How much has each of these discouraged you and your husband from having more children?

The hard time your parents had raising children.

Per Cent
-    5 Discouraged Very Much
     3 Much
   16 Some   (1)
+ {19 Little
  {57 Very Little or Not at All

SCALE 6a. Adherence to traditions.

Is it worse for a woman to do certain things than for a man? For instance:

Lie?

Per Cent
- 71 No Worse for a Woman
+ {17 Somewhat Worse   (2)
  {12 Much Worse

Swear?

Per Cent
- 18 No Worse for a Woman
+ {25 Somewhat Worse   (1)
  {56 Much Worse

Drink?

Per Cent
- 21 No Worse for a Woman
+ {25 Somewhat Worse   (1)
  {54 Much Worse

Carry on With the Other Sex?

Per Cent
- 35 No Worse for a Woman
  16 Somewhat Worse   (2)
+ {48 Much Worse

Smoke on the Street?

Per Cent
- 12 No Worse for a Woman
  21 Somewhat Worse   (1)
+ {67 Much Worse

Do you approve of a married woman with children holding a paid job outside the home if satisfactory arrangements can be made for the care of the children?

Per Cent
-    5 Strongly Approve
   21 Rather Approve
   14 Doubtful   (2)
   32 Rather Disapprove
+ {28 Strongly Disapprove

Scale 6b. Adherence to traditions.

Do you believe boys should be given more freedom than girls?

Per Cent

- *29* Definitely No
+ $\begin{cases} 18 \text{ Probably No.} \\ 18 \text{ Doubtful} \qquad\qquad (1) \\ 31 \text{ Probably Yes} \\ 4 \text{ Definitely Yes} \end{cases}$

If there are *no children* in a family, how easy should it be to get a divorce?

Per Cent

- *14* Very Easy
  15 Fairly Easy
+ $\begin{cases} 39 \text{ Not Too Easy but Not} \\ \qquad \text{Too Hard} \\ 19 \text{ Fairly Hard} \qquad (1) \\ 13 \text{ Very Hard} \end{cases}$

Do parents have the right to expect that their children will appreciate the sacrifices parents make for them?

Per Cent

+ $\begin{cases} 22 \text{ Definitely Yes} \\ 28 \text{ Probably Yes} \end{cases}$
- *13* Doubtful   (2)
  18 Probably No
  19 Definitely No

How much do you think having children helps to keep a marriage from breaking up?

Per Cent

+ $\begin{cases} 64 \text{ Very Much} \\ 18 \text{ Much} \end{cases}$
- *13* Some   (1)
  2 Little
  3 Very Little

Do you think men should have the main say about important matters?

Per Cent

+ $\begin{cases} 14 \text{ Definitely Yes} \\ 38 \text{ Probably Yes} \end{cases}$
- *28* Doubtful   (2)
  11 Probably No
  9 Definitely No

If it is all right to do something on weekdays, is it all right to do it on Sundays?

Per Cent

- *18* Definitely Yes
  33 Probably Yes
+ $\begin{cases} 19 \text{ Doubtful} \qquad\qquad (2) \\ 18 \text{ Probably No} \\ 13 \text{ Definitely No} \end{cases}$

Couples have various reasons for wanting each of their children. The reasons mentioned most frequently are given below.

How much did each of these reasons encourage you and your husband to have your last child?

A belief that it is a religious duty to have a family.

A feeling in your or your husband's family that it is important to carry on the family name or stock.

Per Cent

- *49* Encouraged Very Little
  16 Little
+ { *15* Some   (3)
    5 Much
    8 Very Much

Per Cent

- *52* Encouraged Very Little
  16 Little
+ { *15* Some   (3)
    3 Much
    6 Very Much

The traditional belief that married couples ought to have children.

Per Cent

- *27* Encouraged Very Little
  12 Little
  22 Some   (3)
  10 Much
+ { *22* Very Much

SCALE 7. Interest in religion.

How much have you been interested in religion:

Since marriage?

When you were 10 to 15 years old?

Per Cent

- *10* Very Little
  10 Little
  42 Some   (3)
  19 Much
+ { *19* Very Much

Per Cent

-   *4* Very Little
    6 Little
  35 Some   (3)
  27 Much
+ { *27* Very Much

Some people are greatly interested in religion or church activities, others have little interest in these matters. In each case the following beliefs are often mentioned.

How important is each of these beliefs in accounting for your interest in religion or church activities? Even though your interest is slight, one or more of these beliefs may be of much importance in giving you some interest rather than one at all.

Churches provide social life.

Religion brings fellowship with God.

Per Cent

- *12* No Importance
  14 Little Importance
+ { *38* Some Importance   (2)
  18 Much Importance
  17 Great Importance

Per Cent

-   *2* No Importance
    2 Little Importance
+ { *12* Some Importance   (2)
  25 Much Importance
  59 Great Importance

Churches are the center of useful activities.

Per Cent

- 4 No Importance
  8 Little Importance
  34 Some Importance (3)
  29 Much Importance
+ {24 Great Importance

Religion helps one lead a better life day by day.

Per Cent

- 1 No Importance
  3 Little Importance
  14 Some Importance (1)
+ {26 Much Importance
  {56 Great Importance

Religion prepares one for eternal life.

Per Cent

- 3 No Importance
  4 Little Importance
  {13 Some Importance (1)
+ {18 Much Importance
  {62 Great Importance

Religion helps build a better world.

Per Cent

- 1 No Importance
  1 Little Importance
  7 Some Importance (1)
  15 Much Importance
+ {76 Great Importance

How often did you attend church or Sunday school when you were 10 to 15 years old?
Per Cent
- 1 Very Seldom
  1 Seldom
  8 Sometimes (2)
  24 Often
+ {65 Regularly

SCALE 8a. Feeling of personal inadequacy of self.

Think back over the twelve to fifteen years that you have been married. Then answer the parts of this question so that they will show how things have been DURING MOST OF YOUR MARRIED LIFE.

How often has everything seemed to go wrong without any reason at all?

Per Cent

- 6 Very Often
  11 Often
  39 Sometimes (2)
+ {25 Seldom
  {19 Very Seldom

Do you get upset easily?

Per Cent

- 9 Very Easily
  22 Easily
  {47 Ordinarily (1)
+ {18 Quite Calm
  { 3 Very Calm

On the whole have you had your share of good breaks?

Per Cent

- 3 Definitely No
  6 Probably No
  14 Doubtful   (1)
+ {58 Probably Yes
  {19 Definitely Yes

How often is it difficult for you to make up your mind about the things that have to be done day by day?

Per Cent

- 3 Very Often
  6 Often
  30 Sometimes   (2)
+ {31 Seldom
  {30 Very Seldom

Do you usually feel cheerful and look on the bright side of things?

Per Cent

+ { 4 Extremely Cheerful
  {15 Very Cheerful
- 34 Rather Cheerful
  42 Ordinary   (3)
  4 Rather "Blue"
  0 Very "Blue" }
    Extremely "Blue"}

How much confidence do you have in yourself?

Per Cent

- 3 Very Little}
    Little   }
  8 Somewhat Less than Average
  61 About Average   (3)
+ {10 Somewhat More than Average
  {10 Much
  { 9 Very Much

How much energy and pep do you ordinarily have?

Per Cent

- 6 Very Little}
    Little   }
  8 Somewhat Less than Average
  52 About Average   (3)
  15 Somewhat More than Average
+ {10 Much
  { 9 Very Much

How much are you inclined to worry?

Per Cent

- 13 Very Much
  9 Much
  {15 Somewhat More than Average
  {36 About Average   (1)
+ { 9 Somewhat Less than Average
  {12 Little
  { 6 Very Little

On the whole, how good a chance do you have to express yourself and show what you are worth either in your home-making or in your outside interests?

Per Cent

-   *1* Very Poor Chance
    3 Poor Chance
   43 Fair Chance   (2)
+ { *38* Good Chance
   14 Excellent Chance

SCALE 8b.   Perception of husband's feeling of personal inadequacy.

How often is it difficult for your husband to make up his mind about the things that have to be done day by day?

Per Cent

-   *1* Very Often
    4 Often
   20 Sometimes   (1)
+ { *35* Seldom
   39 Very Seldom

How much confidence does your husband have in himself?

Per Cent

-   *2* Very Little }
      Little   }
    4 Somewhat Less and Avage
   50 About Average   (2)
   14 Somewhat More than Average
+ { *16* Much
   14 Very Much

Does your husband usually feel cheerful and look on the bright side of things?

Per Cent

+ { *5* Extremely Cheerful
   17 Very Cheerful
- *34* Rather Cheerful
   36 Ordinary   (2)
    6 Rather "Blue"
    1 Very "Blue" }
      Extremely "Blue" }

How much energy and pep does your husband ordinarily have?

Per Cent

-   *2* Very Little }
      Little   }
    5 Somewhat Less than Average
   54 About Average   (2)
   17 Somewhat More than Average
+ { *12* Much
   10 Very Much

Does your husband get upset easily?

Per Cent

-   6 Very Easily
  12 Easily
+ {34 Ordinary   (1)
    31 Quite Calm
    17 Very Calm

How much is your husband inclined to worry?

Per Cent

-   5 Very Much
   4 Much
  11 Somewhat More than
     Average
+ {41 About Average   (1)
    11 Somewhat Less than
       Average
    16 Little
    11 Very Little

SCALE 9. Tendency to perceive factors as deterrents to having children.

Every couple has reasons for not having more children. The following are some reasons which are given frequently. How much has each of these discouraged you and your husband from having more children?

Not being more interested in children.

Per Cent

-   1 Discouraged Very Much
   2 Much
  11 Some   (2)
  20 Little
+ {65 Very Little or Not at All

The hard time your parents had raising children.

Per Cent

-   5 Discouraged Very Much
   3 Much
  16 Some   (2)
  19 Little
+ {57 Very Little or Not at All

People in "our crowd" don't have more children.

Per Cent

-   1 Discouraged Very Much
   1 Much
   6 Some   (1)
  13 Little
+ {79 Very Little or Not at All

Not wanting to be tied down more by children.

Per Cent

-   2 Discouraged Very Much
   4 Much
  18 Some   (2)
  19 Little
+ {56 Very Little or Not at All

A feeling that children cause husband and wife to lose interest in each other.

The poor health or physical condition of your husband.

Per Cent

- 1 Discouraged Very Much
  1 Much
  4 Some   (1)
  8 Little
+ {86 Very Little or Not at All

Per Cent

- 4 Discouraged Very Much
  2 Much
  6 Some   (1)
  15 Little
+ {74 Very Little or Not at All

SCALE 10. Tendency to plan in general.

Think back over the twelve to fifteen years that you have been married. Then answer the parts of this question so that they will show how things have been DURING MOST OF YOUR MARRIED LIFE.

When your husband has worked steadily, how often have you run out of money between pay checks?

Do you plan things in advance or wait until the time comes?

Per Cent

   { 7 Very Often
   |12 Often
+ |32 Sometimes   (1)
   |22 Seldom
- 26 Very Seldom

Per Cent

+ { 3 Almost Always Wait
  {13 Usually Wait (2)
- 28 Plan as Often as Wait
  42 Usually Plan
  14 Almost Always Plan

Do you try to keep extra things on hand for emergencies, like a little cash, canned goods, first aid supplies, etc.?

Are you a good manager?

Per Cent

  { 1 Definitely No
  | 2 Probably No
+| 4 Doubtful   (2)
  |35 Probably Yes
- 59 Definitely Yes

Per Cent

  { 1 Very Poor}
  {   Poor   }
+{ 2 Somewhat Poorer than
  {   Average
  {58 About Average   (1)
- 28 Good
  8 Very Good
  2 Excellent

Do you plan your buying for the family to take advantage of sale prices?

Many Americans buy household goods on the monthly (or weekly) payment plan. What part of yours have you bought that way?

Per Cent

$+\begin{cases} 2 \text{ Very Seldom} \\ 3 \text{ Seldom} \\ 28 \text{ Sometimes} \end{cases}$ (2)

   34 Often

$-$ *33* Very Often

Per Cent

$+\begin{cases} 9 \text{ All of Them} \\ 36 \text{ Most of Them} \\ 27 \text{ Some} \end{cases}$ (1)

$-$ *19* Few

  8 None

SCALE 13. Dissatisfaction with husband.

Everyone knows that even happily married couples often disagree about some things.

How much do you and your husband disagree about:

Handling family finances?   Things that a man should do around the home?

Per Cent

$-$ *2* Disagree Very Much

   2 Much

  16 Some   (2)

  16 Little

$+\{$*63* Very Little

Per Cent

$-$ *2* Disagree Very Much

   3 Much

  21 Some   (3)

  19 Little

$+\{$*56* Very Little

Sexual relations?   Everything considered how happy has your marriage been?

Per Cent

$-$ *1* Disagree Very Much

   1 Much

  12 Some   (2)

  17 Little

$+\{$*69* Very Little

Per Cent

$-$ *5* Extremely Unhappy $\rBrace$

      Decidedly Less Happy

       than Average

      Somewhat Less Happy

       than Average

  28 About Average   (3)

  18 Somewhat More Happy

       than Average

  21 Decidedly More Happy

       than Average

$+\{$*29* Extremely Happy

Few women are completely satisfied with themselves or their husbands.

If you could make your husband over, how much would you want to change him in the following ways:

Make him more affectionate?   Make him less selfish?

Per Cent

- 2 Want Very Much
  4 Much
  21 Some   (3)
  20 Little
+ {52 Very Little

Make him more considerate in sex relations?

Per Cent

- 2 Want Very Much
  2 Much
  11 Some   (1)
  13 Little
+ {72 Very Little

Per Cent

- 3 Want Very Much
  3 Much
  17 Some   (1)
+ {13 Little
  {64 Very Little

Make him less fault-finding?

Per Cent

- 3 Want Very Much
  5 Much
  15 Some   (2)
  14 Little
+ {63 Very Little

Make him more truthful?

Per Cent

- 3 Want Very Much
  2 Much
  5 Some   (1)
  9 Little
+ {81 Very Little

Appendix C. The factor matrix before rotation.[1]

IDENTIFICA-TION CODE	VARIABLE	FACTORS					Commu-nality
		I	II	III	IV	V	
FP.	Effective Fertility Planning	.50	.20	−.27	.39	.16	.54
F.	Low Fertility	.46	.31	−.39	.33	.22	.61
1.	Low Sensitivity to Induce-ments to Fertility	.28	−.10	−.16	−.28	−.10	.20
2.	Favorable Assessment of Conditions	.50	−.06	.17	−.18	.21	.36
3.	Most Liking for Children	.17	−.36	.16	.12	−.21	.25
4.	Low Felt Restriction	.31	−.48	−.33	−.17	−.04	.47
5.	High Assessment of Child-hood	.25	−.19	.08	.09	−.23	.17
6a.	Low Adherence to Tradi-tion	.13	.17	−.17	−.12	.03	.09
6b.	Low Adherence to Tradi-tion	.18	.12	−.18	−.07	−.20	.13
7.	Low Interest in Religion	.04	.27	−.25	−.14	.07	.17
8a.	Least Feeling of Personal Inadequacy (Self)	.47	−.38	.08	.17	.19	.43
8b.	Least Feeling of Personal Inadequacy (Husband)	.22	−.29	.08	.15	.14	.18
9.	Least Perception of Deter-rents to Fertility	.30	−.42	−.17	−.10	−.27	.38
10.	High Tendency to Plan in General	.37	−.21	.18	.09	.13	.24
13.	High Satisfaction with Husband	.32	−.36	−.08	.09	.16	.27
14.	High Education of Wife	.54	.23	.11	.16	−.33	.49
15.	High Education of Husband	.51	.21	.18	.04	−.20	.38
16.	High Occupational Class	.50	.19	.10	−.09	−.09	.31
17.	High Net Worth	.60	.23	.20	−.17	.26	.55
18.	High Rating on Chapin's Scale	.71	.35	.14	−.04	−.03	.65
19.	High Average Annual Earnings of Husband	.64	.26	.29	−.21	.10	.62
20.	Rent at Interview	.73	.38	.25	−.12	.10	.75

[1] The rotated factor matrix appears in Table 3.