

FEMALE PARTICIPATION IN THE LABOR FORCE AND FERTILITY:  
CROSS-SECTIONAL AND LONGITUDINAL PERSPECTIVES

By

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Dedicated to my father,  
Gordon K. Marshall, and my friends  
Dr. Benjamin L. Gorman and  
Susan Bailey

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FEMALE PARTICIPATION IN THE LABOR FORCE AND FERTILITY:  
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In an attempt to clarify the relationship between female participation in the labor force and fertility, considered at the aggregate level, a theoretical model is offered which suggests five structural conditions of female employment and three family situation factors as determinants of rates of fertility and female participation in the labor force. Following reviews of the literature, each concept in the theoretical model is operationalized; seventeen longitudinal hypotheses and twenty-three cross-sectional hypotheses are formulated. Longitudinal hypotheses are tested by consideration of data obtained from a variety of United States Government publications relating to fertility and female employment for the period 1930 through 1970. Longitudinal trends in the indices are traced and correlations of trends are observed.

Cross-sectional hypotheses are tested in a series of eight multiple regression models which control for ages of wives in the sample. Data were obtained from the 1970 one in one hundred Public

Use Sample of the five per cent census long form questionnaires, by random selection of family households within each of forth-two randomly selected Standard Metropolitan Statistical Areas containing populations of 250,000 or over. Results of the analyses lead to policy recommendations regarding possible effects on fertility rates of changes in women's occupational roles and income rewards associated with employment.

## CHAPTER 1

### A CROSS-SECTIONAL AND LONGITUDINAL STUDY OF FERTILITY TRENDS IN RELATION TO FEMALE PARTICIPATION IN THE LABOR FORCE

The objective of the present work is to develop and test an empirical model of the relationships of social structural indices to rates of fertility and female participation in the labor force. Rates of fertility and female participation in the labor force are theoretically viewed as negatively related and responsive to conditions of the occupational structure involving roles and economic statuses of employed women. It will be argued that the range of occupational roles available to women relative to men, as well as the economic rewards associated with female employment, represent structural factors affecting the probabilities of childbearing and labor force participation among women in a society. It will be argued that these relationships are affected by the occupational position of the husband and the age of the wife, due to economic conditions characterizing the family situation at various stages of the family life cycle.

Relevant literature dealing with the theoretical relationships among the concepts involved will be reviewed, and a theoretical model will be developed which will suggest hypotheses. Longitudinal trends of the relevant occupational indices for the case of the United States from 1930 to 1970 will be reviewed, and correlations of these trends which bear on the hypotheses will be described. Actual

statistical testing of the hypotheses will be carried out utilizing cross-sectional data from 42 randomly selected Standard Metropolitan Statistical Areas of the United States.

The present study will attempt to limit consideration as far as possible to structural indices of the occupational sphere characterizing a given society, and to develop multiple regression models predictive of Total Fertility Rates and female labor force participation rates. Justifications of structural indices implicitly and explicitly rest on underlying assumptions regarding the relationships of structural conditions to decision making processes and behavior occurring at the level of individual families. These assumptions will be clarified, and where possible explicitly formulated as theoretical propositions for further research.

#### A Theoretical Framework of Relevant Variables

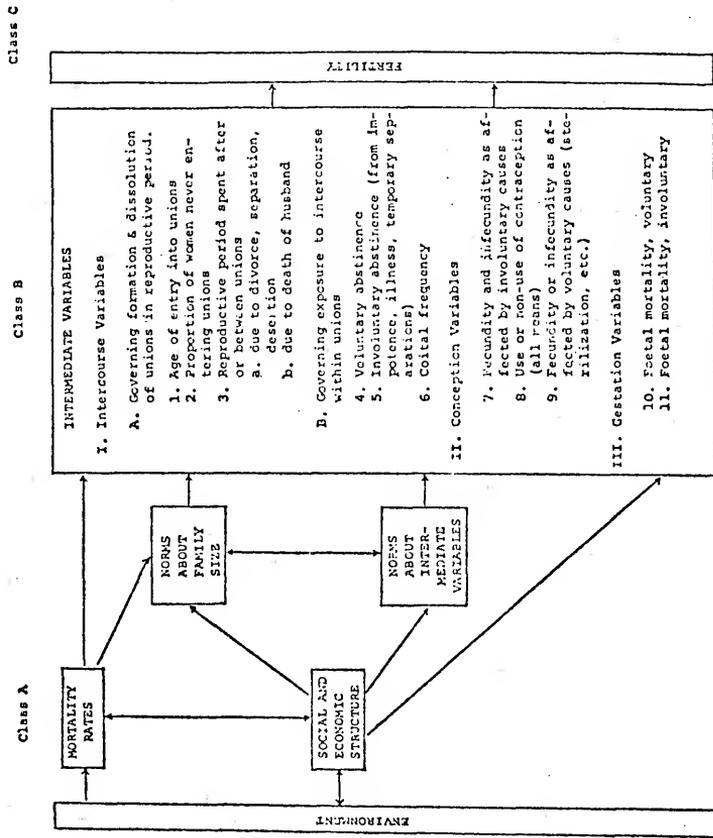
An adequate explanation of a relationship between two societal variables should be such as to suggest mechanisms by which changes in social structures may affect the behavior of members of the society which determine the societal dependent variable. Davis and Blake (1950) have recognized the importance of such intermediate variables and have suggested for consideration 11 which are believed to be directly related to fertility. Freedman (1967) has suggested several classes of sociological independent variables which theoretically may affect the intermediate variables. Combining each of these theoretical contributions, Yaukey (1969) has developed a model of hypothetical relationships

among the structural, normative, and intermediate variables, and fertility. This model is reproduced in Figure 1.

Summarizing much of the theoretical and empirical work of the effect of income on fertility, Simon (1974, p. 5-6) has illustrated a more detailed model of the manner in which structural conditions of the society may affect fertility levels through the intervening effects of the family decision-making process viewed from a micro-economic perspective. This model is reproduced in Figure 2. The value of these models is that they sensitize the sociologist to the requirements of an adequate explanation of variations in fertility rates, while suggesting structures of social norms, and the family economic situation, as intervening mechanisms through which structural conditions may come to differentially influence fertility.

Basic to the present theoretical orientation concerning female participation in the labor force and fertility is the assumption that conditions of the occupational structure reflect normative role definitions regarding the employment of women. It is also assumed that conditions of the occupational structure affect the relative costs of decisions by women to work, to bear children, to refrain from both types of activity, or to carry out both simultaneously. In the present view, female employment is seen as fully legitimated under conditions in which employed women and men pursue similar occupational roles. Under such circumstances, the range of role alternatives which women may choose over traditional wife and mother roles, including marriage and childbearing, is maximized. Thus, the possibility of locating a desirable role alternative to traditional wife and mother roles is increased.

FIGURE 1. DETERMINANTS OF FERTILITY



Source: David Yaukey, "On Theorizing About Fertility" The American Sociologist, May, 1969, pp. 101.



Conversely, concentration of women in a narrower range of occupations reduces the probability of locating a desirable role alternative to traditional wife and mother roles, and thus increases the probability of acceptance of these traditional roles. The above argument suggests the following theoretical propositions.

Theoretical Proposition 1. Among social systems or within a given social system over time, the greater the probability of labor force participation among women of childbearing age, the lower the probability of childbearing among women of childbearing age.

Theoretical Proposition 2. Among social systems or within a given social system over time, the greater the differentials in sexual distributions among occupational roles, the lower the probability of labor force participation among women of childbearing age.

Theoretical Proposition 3. Among social systems or within a given social system over time, the greater the differentials in sexual distributions among occupational roles, the greater probability of childbearing among women of childbearing age.

Differentials in sexual distributions among occupational roles alone do not adequately represent conditions of female employment which may be influential on childbearing and female employment decisions and behavior. Just as structural conditions affecting the range of available occupational roles for women may be expected to be related to levels or rates of fertility and female participation in the labor force, so also may structural conditions involving the economic rewards associated with female employment, and thus the economic status of employed women. To the extent to which increased

income rewards make the employment role more desirable, higher income rewards associated with female employment may be associated with increased probabilities that women will choose employment as an alternative to traditional wife and mother roles.

Income rewards, however, may be viewed from various perspectives. In one sense it may be suggested that it is the absolute level of income in standardized units which is related to probabilities of childbearing and participation in the labor force. In another sense it may be suggested that it is the level of income rewards relative to some point in the past which may be related to the probabilities of these types of behavior. A third perspective would suggest that it is the economic status of women relative to men which may be negatively related to probabilities of childbearing, and positively related to probabilities of female participation in the labor force. Several theoretical propositions are, therefore, suggested.

Theoretical Proposition 4. Among social systems or within a given social system over time, the higher the income rewards associated with female employment, the greater the probability of labor force participation among women of childbearing age.

Theoretical Proposition 5. Among social systems or within a given social system over time, the higher the income rewards associated with female employment, the lower the probability of childbearing among women of childbearing age.

Theoretical Proposition 6. Among social systems or within a given social system over time, the greater the rate of increase in income rewards associated with female employment from time  $t-1$  to time

t, the greater the probability of labor force participation among women of childbearing age.

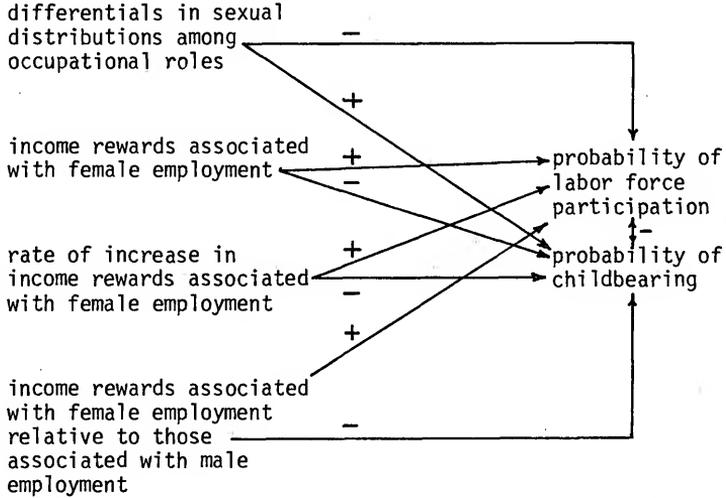
Theoretical Proposition 7. Among social systems or within a given social system over time, the greater the rate of increase in income rewards associated with female employment from time  $t-1$  to time  $t$ , the lower the probability of childbearing among women of childbearing age.

Theoretical Proposition 8. Among social systems or within a given social system over time, the higher the income rewards associated with female employment relative to those for males, the greater the probability of labor force participation among women of childbearing age.

Theoretical Proposition 9. Among social systems or within a given social system over time, the higher the income rewards associated with female employment relative to those for males, the lower the probability of childbearing among women of childbearing age.

The propositions above suggest a logical but oversimplified model of the relationships of structural conditions of female employment to rates or probabilities of childbearing and female participation in the labor force. This crude model is depicted in Figure 3. Each of the theoretical propositions listed above could, assuming availability of data, be subjected to operationalization and testing. However, the model derived from these propositions is logical to the extent to which underlying assumptions are valid. Two assumptions are of particular importance and should be made explicit. The first assumes that it is the occupational distribution of employed women

FIGURE 3. PROPOSED RELATIONSHIPS OF STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT TO PROBABILITIES OF CHILDBEARING AND FEMALE PARTICIPATION IN THE LABOR FORCE



relative to that of employed men that is influential in the development of actor's occupational expectations and perceptions of norms and opportunities, and is thus influential on women's decisions regarding fertility and labor force participation. This stands in contrast to the nature of work available to either, or both, sexes. A second assumption suggests that female labor force participation and fertility represent mutually exclusive forms of behavior. Each of these assumptions rests on questionable foundations, and represents potential theoretical flaws which without more detailed consideration may seriously inhibit comprehension of the relationships among female participation in the labor force, fertility, and their determinants.

Figure 4 suggests four states in which women may be located with reference to participation in the labor force and childbearing during a given period of observation. To the extent to which

FIGURE 4. CHILDBEARING AND LABOR FORCE PARTICIPATION IN AGGREGATE PERSPECTIVE.

	In labor force	Not in labor force	Total Percentage
gave birth during period	1% of all women	2% of all women	Probability of Childbearing
did not give birth during period	3% of all women	4% of all women	
Total Percentage	Probability of Labor Force Participation		

participation in the labor force or childbearing would represent an either/or choice, cells 2 and 3 would contain all the cases, and cells

1 and 4 would be empty. In such a case, all variation in probabilities of labor force participation would be "predicted" by consideration of the percentage of cases in either cell 3 or cell 2. Similarly, the probability of childbearing could be completely ascertained by consideration of the percentages in either of the same cells. In such a circumstance there would be obtained a one to one inverse relationship between probabilities of female participation in the labor force and childbearing.

However, the above circumstance is not likely to occur. Women may elect to neither participate in the labor force nor engage in childbearing, while other women may both participate in the labor force and give birth during a given year. Excluding considerations of measurement error it remains necessary to suggest structural and familial conditions which may affect changing percentages in cells 1 and 4, and so confound the predicted relationships.

To some extent, variations in percentages in cell 1 may reflect the situation of women who either worked during the first portion of the period under consideration and gave birth during the later portion of that period, or vice versa. In the former case such women may have chosen childbearing activity over their previous work roles, while in the latter case family economic conditions, occupational role responsibilities, or tastes may have motivated a return to work. In either case it is useful to inquire as to types of structural conditions which may facilitate movement into and out of the labor force with minimum conflict between occupational and motherhood roles.

Such structural conditions may be indicated by the prevalence of the type of occupational roles which Turner (1964) has termed "secondary careers." In Turner's view such careers represent special roles adopted by many women rather than alternatives or substitutes for the traditional homemaker role. Within the occupational sphere such roles may be expected to be those which require minimal training prior to entry to the labor force, allow movement into and out of the labor force, involve low levels of responsibilities, and involve tasks which may easily be transferred to new workers. Such occupations stand in contrast to the higher professions and managerial positions which require extensive training and life commitments, and which entail high levels of responsibilities (Weber, 1946, pp. 198-204; Hall, 1969, pp. 70-174). These secondary career occupational roles, and particularly those occupations "sex typed" as female roles, might not serve as inducements to postponed childbearing, or as desirable alternatives to the traditional wife and mother roles due to corresponding "lower rank" and "lesser pay" (Keller, 1972, p. 275).

Allowing easy mobility into and out of the labor force, such secondary career occupational roles, as for example clerical and service occupations, may permit the merging of labor force participation and childbearing, and movement between these roles over short periods of time. Thus the prevalence of such roles may confound the theoretical inverse relationship between probability of female participation in the labor force and probability of childbearing by producing a high percentage in cell 1 of Figure 3. Two theoretical propositions may, therefore, be offered.

Theoretical Proposition 10. Among social systems or within a given social system over time, the greater the prevalence of female sex typed secondary career occupational roles, the greater the probability of labor force participation among women of childbearing age.

Theoretical Proposition 11. Among social systems or within a given social system over time, the greater the prevalence of female sex typed secondary career occupational roles, the greater the probability of childbearing among women of childbearing age.

In addition to the above propositions it should be recognized that the prevalence of such roles may be related to other structural factors in the model being developed. Unless explicitly considered, such relationships may confound the effects of these other factors on probabilities of female participation in the labor force and childbearing. As it has been suggested that lower rates of pay may be associated with these roles, theoretical propositions 12 and 13 are offered.

Theoretical Proposition 12. Among social systems or within a given social system over time, the greater the prevalence of female sex typed secondary career occupational roles, the lower the income rewards associated with female employment.

Theoretical Proposition 13. Among social systems or within a given social system over time, the greater the prevalence of female sex typed secondary career occupational roles, the lower the level of income rewards associated with female employment relative to those for males.

The prevalence of sex typed secondary career occupational roles may also confound the relationships of differentials in sexual

distributions among the occupational roles to probabilities of female participation in the labor force and childbearing. To the extent to which women do not participate in the same occupational roles as men, those occupational roles in which women are concentrated may represent roles in which conflicts between wife-mother responsibilities and occupational responsibilities are minimized. On this basis, theoretical proposition 14 is offered.

Theoretical Proposition 14. Among social systems or within a given social system over time, the greater the prevalence of female sex typed secondary career occupational roles, the greater the differentials in sexual distributions among occupational roles.

The prevalence of secondary career opportunities may confound the relationships of differential sexual distributions among occupational roles with probabilities of female participation in the labor force and childbearing in another way as well. It has been suggested that such occupational roles may require minimal training prior to entry to the labor force, and may involve tasks which would be easily transferred to a new worker; such roles may represent employment opportunities for women in the later childbearing years who have already completed their families. Thus propositions 15 and 16 are suggested.

Theoretical Proposition 15. Among social systems or within a given social system over time, the greater the age of the female population under consideration, the more positive the relationship between prevalence of female sex typed secondary career occupational roles and the probability of labor force participation among women in the age category under consideration.

Theoretical Proposition 16. Among social systems or within a given social system over time, the greater the age of the female population under consideration, the more positive the relationship between differentials in sexual distributions among occupational roles and the probability of labor force participation among women in the age category under consideration.

Before turning attention from consideration of the effects of structural conditions of female employment on probabilities of labor force participation and childbearing, an additional theoretical proposition may be offered. Although each proposition thus far presented has been stated as applicable to both longitudinal and cross-sectional perspectives, the specifically longitudinal nature of theoretical proposition 17 is mathematically inherent in the concepts.

Theoretical Proposition 17. Within a given social system over time, the greater the rate of increase in income rewards associated with female employment from time  $t-1$  to time  $t$ , the higher the income rewards associated with female employment.

Although theoretical proposition 17 may appear tautological, the problematic nature of the relationship becomes clear when it is recognized that it is not income levels at time  $t-1$  and time  $t$  which are compared, but the respective trends over time. In the case of theoretical proposition 17 the longitudinal trend in percentage increases is compared with the longitudinal trends in the absolute level of income.

Returning attention to Figure 4, cell 4 represents an additional condition which may confound the suggested relationships in

the model depicted in Figure 3. Cell 4 represents the case of women who neither participated in the labor force or gave birth during the period of observation. Such women would be characterized by some source of "income" other than that provided by their own employment. The present discussion will assume that most such women, in the child-bearing ages, are married and living with their husbands, and will direct attention to that situation. The question now becomes which structural and familial conditions may influence these women such that they choose neither work nor childbearing.

Such factors as the range of available occupational roles and income rewards associated with female employment may reduce the desirability of employment, but these factors have been discussed in the context in which employment is viewed as an alternative to childbearing. Nonetheless, even when desirability or probability of childbearing is reduced for other reasons these factors may continue to act such as to reduce the probability of labor force participation. In addition to these structural factors, situational family factors which may enter into decision-making processes may reduce the desirability of both labor force participation and childbearing.

The range of family situation factors which may enter into the decision-making processes regarding childbearing is quite large, as indicated by the graphic model of total fertility per potential parent provided by Simon and reproduced in Figure 2. However, the present discussion is concerned not with total completed fertility per potential parent, but with short run effects of family situation factors on probabilities of wives' participation in the labor force

or childbearing during a period of observation. For this reason attention at present will be limited to two concepts: relative income affluence as perceived by the husband and wife in the family, and prior fertility of the wife. In limiting consideration of family situation factors to these two, the family decision concerning how many children to have, and when, is here viewed as substantially an economic decision. Excluding other "non-economic" factors contributing to such decisions narrows the research area, but at the cost of reducing explanation in terms of some portion of variance.

To speak of relative income affluence, in the present context, is to speak of the level of living obtainable at a given level of income in contrast to some desired standard of living. The desired standard of living is here viewed as related to the consumption tastes of the married couple. The definition of relative income must, therefore, consider the sources of the consumption tastes of the married couple, and therefore, the reference group to which the husband and wife are oriented in evaluating their own level of living and in striving to achieve a desired standard of living.

This type of argument has been put forth most forcefully by Easterlin (1966; 1969; 1971). While the present work does not intend to "test" Easterlin's elaborate theories regarding the relationships of income and economic cycles to fertility patterns, his work is valuable in the present context in that he suggests that the source of consumption tastes, particularly among young couples, is the family of origin. Easterlin suggests that the appropriate referent would be the situation of the family of origin when the parents of the family

of origin were age 35 to 44 (1966, p. 140). During the period in which parents were in that age range, he argues, the potential parents of the next generation were in their teenage years and were forming their consumption tastes. The argument then generally follows that as the young couple's income is likely to be insufficient for both the "inherited" desired material consumption level and for childbearing, fertility declines as material consumption desires are given priority. It may be further suggested that to the extent to which childbearing may be undertaken without threat to the achievement of the desired material consumption level, probability of childbearing would be expected to increase.

Unfortunately, the realities of data availability do not always correspond with theoretical ideals, and such is the case in the present study. Therefore, it is necessary to offer some proxy for the theoretical referent, and such a proxy should be suggested and justified on theoretical grounds. Initially, it might be suggested that a ratio of present husband's income to the income of husbands in age group 35 to 44 might be utilized as an index reflective of relative income affluence. (The wife's income would not be considered in the present context as economic conditions of female employment are already included in the model as a structural factor.) Consideration of income alone is not adequate, as the "meaning" in income is relative to such factors as tastes and style of life. For this reason comparisons of income as an indicator should be made within groups whose members are at least theoretically viewed as characterized by similar tastes and styles of life.

For present purposes it is here suggested that broadly defined occupational groups of husbands may be utilized for classification of families for purposes of constructing indices of relative income affluence. If such a classification were to be used the following assumptions should be made explicit.

1. Within occupational groups, actors hold similar tastes and desire similar styles of life.
2. Within occupational groups, current incomes of husbands age 35 to 44 are indicative of the level of living enjoyed by families of origin of husbands and wives of the current child-bearing generation, when those actors were in their teenage years and forming their consumption tastes.
3. Incomes of husbands are indicative of the level of living of the family which the potential parents perceive themselves able to enjoy when they exclude consideration of the earning potential of the wife.
4. The difference between the husband's income and that for husbands age 35 to 44 in the same occupational group, is reflective of the difference between the family's present level of living and the standard of living desired by the husband and wife, based on their consumption tastes and desired style of life.

Assumptions 2, 3, and 4 underlie the use of income as a proxy for level of living. Assumptions 1 and 2 underlie the use of broad occupational groups in the determination of the reference groups, and these assumptions receive conflicting support from the literature. However, Blau and Duncan (1967, pp. 38-48) have noted tendencies toward occupational inheritance within broad occupational groups of white collar, blue collar, and farm workers, and Kohn (1969) has noted international and intra-national conformity within white collar and blue collar family types regarding parental values and childrearing practices. Kiser (1968, pp. 179-207) has noted the long history of consideration of occupational background in studies of differential fertility, and reports on longitudinal trends and cross-sectional variations, as does Cho (1970a, pp. 176-243). Although recognizing the difficulty of quantification of occupational class, the heterogeneity of broad categories, and the probability of changes in occupation during an individual's life, Kiser also suggests that the broad occupational groups of the U.S. Census do "provide meaningful delineations of social status and style of life" (1968, p. 179).

The ultimate determination of the degree to which broad occupational groupings of husbands adequately reflect the coalescence of family situation variables of tastes and style of life, relevant to decisions regarding employment of wives and childbearing, remains an empirical question beyond the scope of the present paper. At present it appears that the use of such a classification may be the best possible solution to a most difficult theoretical and methodological task required by the present research.

Relative income affluence, in terms of the ability to achieve a desired standard of living without employment by the wife, may be expected to influence probabilities of labor force participation as well as probabilities of childbearing. Therefore, theoretical propositions 18 and 19 may be offered, although these apply at the family unit level of analysis and thus are not directly included in the structural model under development.

Theoretical Proposition 18. Among families of wives of childbearing age, the greater the level of relative income affluence, the greater the probability of childbearing by the wife during the period of observation.

Theoretical Proposition 19. Among families of wives of childbearing age, the greater the level of relative income affluence, the lower the probability of labor force participation by the wife during the period of observation.

Theoretical proposition 19 rests on the assumption that at least part of the reason married women may participate in the labor force is perceived financial need, and that as this perceived need declines the desire to seek employment would decline, all other factors being equal. Alone, this family situation factor would not explain variations in cell 4 of Figure 4, and would have uncertain relationships to the other cells. However, interactive effects of this factor with prior fertility of the wife may be suggested as related to variation in cell 4. Prior fertility of the wife may affect probabilities of both future fertility and childbearing, as well as adjust the "meaning" of relative income affluence in

accordance with the number of persons dependent upon the husband's income. Here the assumption is that as the number of children a woman has given birth to increases, the probability of additional births decreases. This assumption is largely supported by the work of Ryder (1970, p. 104) involving parity progression ratios among United States cohorts from cohort 1881-85 to cohort 1941-45. Although short run effects and period measures cannot be imputed from aggregate long run effects, on a theoretical basis proposition 20 may be offered.

Theoretical Proposition 20. Among families of wives of childbearing age, the greater the number of children a wife has given birth to prior to the period of observation, the lower the probability of childbearing by the wife during the period of observation.

As human births usually are singular, and require a nine month period of gestation, it may be expected that prior fertility may be related to age.

Theoretical Proposition 21. Among families of wives of childbearing age, the greater the age of the wife, the greater the number of children she has given birth to prior to the period of observation.

In addition to reducing the probability of additional fertility, prior fertility, or parity, may be expected to affect probabilities of labor force participation. Under the assumption that higher levels of prior fertility may also increase the intensity and number of obligations associated with the wife and mother roles, it may be suggested that higher levels of prior fertility may tend to reduce the desirability of assumption of occupational obligations.

Theoretical Proposition 22. Among families of wives of childbearing age, the greater the number of children a wife has given birth to prior to the period of observation, the lower the probability of labor force participation by the wife during the period of observation.

On the basis of propositions 20 and 21 it may be suggested that the probability of childbearing may decline with the age of the wife. However, before this proposition is formally stated it is useful to observe also the possibility of a relationship between ages of wives and relative income affluence based on husbands' incomes. As the income of the husband is expected to rise with length of work experience, theoretical proposition 23 is offered.

Theoretical Proposition 23. Among families with wives of childbearing age, the greater the age of the wife, the greater the level of the family's relative income affluence.

Theoretical propositions 21 and 23 suggest positive relationships of the age of the wife to factors which have been suggested as associated with decreased probabilities of both labor force participation and childbearing. Therefore, theoretical propositions 24 and 25 may be offered.

Theoretical Proposition 24. Among families of wives of childbearing age, the greater the age of the wife, the lower the probability of labor force participation by the wife during the period of observation.

Theoretical Proposition 25. Among families of wives of childbearing age, the greater the age of the wife, the lower

the probability of childbearing by the wife during the period of observation.

Taken together, propositions 18 through 25 suggest that the family situation factors of relative income affluence and prior fertility of the wife, in interaction, may be related to variations in cell 4 of Figure 4. Let prior fertility of the wife be termed "marital parity" and relative income affluence stand for the perceived difference between level of living enjoyed and standard of living desired. The interaction of these factors may be expressed as parity standardized relative income affluence. As marital parity reduces the perceived relative income affluence to the extent to which additional dependents may rely on the husband's income, the interaction of relative income affluence and marital parity may be written as in formula 1.

$$\text{Formula 1. Parity standardized relative income affluence} = \frac{\text{relative income affluence}}{(\text{marital parity} + 2)}$$

The addition of 2 to the denominator permits the index to reflect the estimated total number of persons dependent on the husband's income.

To the extent to which parity standardized relative income affluence reflects the husband's and wife's perceived income need, theoretical propositions 26 and 27 may be offered.

Theoretical Proposition 26. Among families of childbearing age, the greater the parity standardized relative income affluence, the lower the probability of participation in the labor force by the wife during the period of observation.

Theoretical Proposition 27. Among families of wives of childbearing age, the greater the parity standardized relative income affluence, the greater the probability of childbearing by the wife during the period of observation.

As theoretical propositions 18 to 27 are derived from reasoning based on the family as the unit of analysis, it is at the risk of ecological fallacy that these propositions may be restated in terms of structural indices. However, on the assumption that structural indices may be developed to reflect the extent to which families in a social system are characterized by various levels of marital parity, relative income affluence, and parity standardized relative income affluence, propositions may now be advanced to enter these family situation factors into the present structural model.

Theoretical Proposition 28. Among social systems, the greater the level of relative income affluence for families of wives of childbearing age of a social system, the lower the probability of labor force participation among wives of childbearing age.

Theoretical Proposition 29. Among social systems, the greater the level of relative income affluence for families of wives of childbearing age of a social system, the greater the probability of childbearing among wives of childbearing age.

Theoretical Proposition 30. Among social systems, the greater the level of marital parity among families of wives of childbearing age of a social system, the lower the probability of labor force participation among wives of childbearing age.

Theoretical Proposition 31. Among social systems, the greater the level of marital parity among families of wives of childbearing age of a social system, the lower the probability of childbearing among wives of childbearing age.

Theoretical Proposition 32. Among social systems, the greater the level of parity standardized relative income affluence among families of wives of childbearing age of a social system, the lower the probability of labor force participation among wives of childbearing age.

Theoretical Proposition 33. Among social systems, the greater the level of parity standardized relative income affluence among families of wives of childbearing age of a social system, the greater the probability of childbearing among wives of childbearing age.

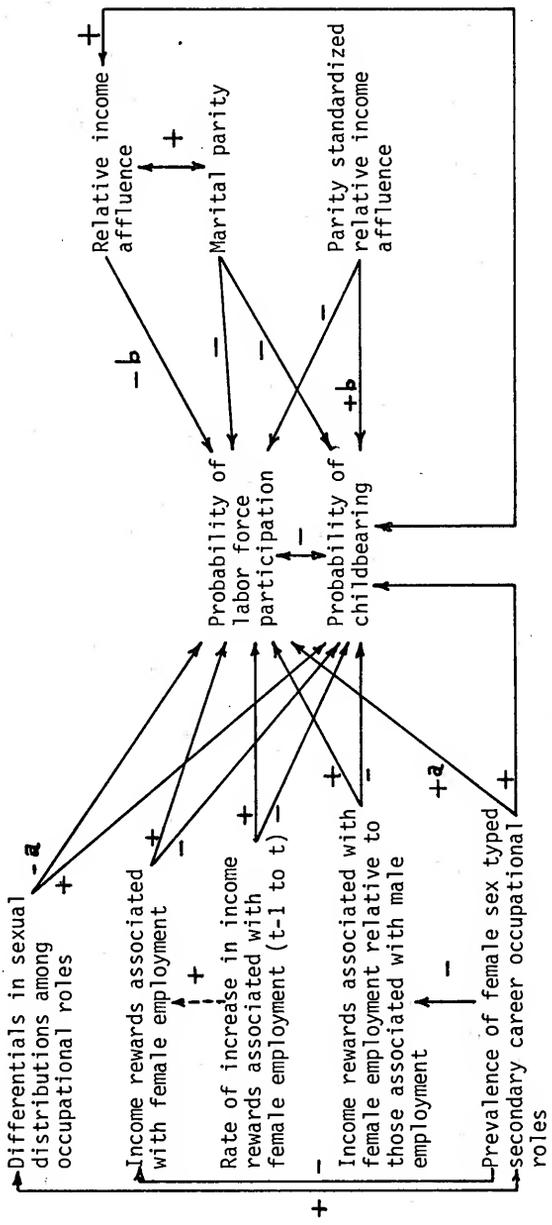
Theoretical Proposition 34. Among social systems or within a given social system over time, the greater the level of marital parity among families of wives of childbearing age of a social system, the greater the level of relative income affluence among wives of childbearing age.

Theoretical Proposition 35. Among social systems or within a given social system over time, the greater the age of the female population under consideration, the more negative the relationship between the level of relative income affluence and the probability of labor force participation among wives in the age category under consideration.

Theoretical Proposition 36. Among social systems or within a given social system over time, the greater the age of the female population under consideration, the more negative the relationship between the level of parity standardized relative income affluence and probability of childbearing among wives in the age category under consideration.

The major propositions of the model which has been developed in the preceding pages are graphically summarized in Figure 5. Excluded from the model are depictions of those theoretical propositions (theoretical propositions 16 through 25) which were developed but which apply strictly to reasoning based on the family as the unit of analysis. Excluded also are such relevant structural indices as percentage of the female population married, and percentage women divorced. The exclusion of these variables represents a limitation of the present model. Finally it should be remembered that the model is theoretical rather than empirical, and development of an empirical model derived from the present model will be limited by availability of data. Although developed to suggest explanations of longitudinal trends in period measures, as well as cross-sectional variations in rates of female labor force participation and fertility, limitations of available data will require that not all suggested relationships may be empirically evaluated from both perspectives. Therefore, in a later section it will be necessary to determine which factors may be operationalized from each perspective, and to derive more limited empirical models with such operationalization in mind.

FIGURE 5. THEORETICAL MODEL OF STRUCTURAL AND FAMILIAL DETERMINANTS OF FERTILITY AND FEMALE PARTICIPATION IN THE LABOR FORCE.



- a. Correlation changes in a positive direction with increases in the age of the female population under study.
- b. Correlation changes in a negative direction with increases in the age of the female population under study.

— Depicts a proposed cross-sectional and longitudinal relationship.  
 ---- Depicts a proposed longitudinal relationship only.

## CHAPTER 2

### RELEVANT LITERATURE: FEMALE PARTICIPATION IN THE LABOR FORCE AND FERTILITY, INTERRELATIONSHIPS, AND DETERMINATES

Although the inverse relationship of female labor force participation and fertility has been considered one of the more obvious relationships among sociological variables, empirically the relationship remains ambiguous when one does not limit consideration to specific populations. Judith Blake (1965) has described the association between married women working and family size as generally one of the strongest and one of the most persistent associations over time and space, as well as the most theoretically reasonable in studies of differential fertility. Linking the question of the relationship of female participation in the labor force and fertility to ideological issues of population policy, she argues that if fertility reduction is to be the goal of population policy, it will not be sufficient to encourage couples to limit fertility to expressed desires, but these desires themselves must be lowered. Blake further argues that one way to accomplish this is to demonstrate the advantages of gainful employment to potential mothers.

Davis (1967) has elaborately argued the need to concentrate on programs to lower the desired number of children. He has suggested that by orienting policy to limitation of fertility to expressed desires, the leaders of current policies avoid inquiring as to the reasons women desire so many children and how to influence these

desires. Davis then proposes several steps to encourage limitation of reproduction as well as postponement of marriage. Non-familial roles should be more highly rewarded. The educational system should redefine sex roles. The occupational and economic structures should be such that women would be paid as well as men. Women should be given equal educational and occupational opportunities. Davis argues that in organizing social life around the place of work rather than around home or neighborhood, women would develop interests which would compete with family interests. Davis notes that several communist countries approximate such a policy, and that even the most underdeveloped have low birth rates.

A similar theoretical and ideological argument is heard from Alice Rossi (1965) who writes that boys and girls should be educated for their adult roles.

This means giving more stress in education, at home and at school, to the future family roles of boys, and the future occupational roles of girls. Women will not stop viewing work as a stopgap until meaningful work is taken for granted in the lives of women as it is in the lives of men. (1965, p. 1201)

Cynthia Epstein (1970a, p. 23) has suggested that certain characteristics of female labor force participation, such as professional orientations, are seen by members of the society as mutually exclusive with femininity. She points out that women who attempt to combine such occupational aspirations with their sense of femininity must deal with a great deal of strain.

Kupinsky (1971) has argued in a manner similar to Davis and Blake that national populations' policies should be such as to

encourage females to participate in the labor force continuously, in order that fertility may be reduced. In his own work Kupinsky has demonstrated the negative relationship between number of children ever born to women and the proportion of their married lives spent in the labor force, and has related these findings to socioeconomic status fertility differentials. These data indicate that female participation in the labor force produces a larger reduction in the fertility for upper class women than for lower class women. The findings are limited, however, to rural women, and do not apply to urban women.

Tarver et al. (1970) studied the urban influence on fertility and employment patterns of women living in homogeneous areas. Studies of married, widowed, and divorced women in Atlanta, Indianapolis, and Omaha indicated that the percentage of employed women declines consistently with distance from the metropolitan center, and that fertility increases consistently with distance from the metropolitan center. It may be that such findings reflect the ecological spacing of bedroom communities rather than the effect of urbanization on fertility.

As indicated by Kupinsky's (1971) recognition of variations in relationships by socioeconomic status, obtained relationships of female participation in the labor force and fertility are not consistent. Elizabeth Haven (1972) has shown consistent inverse relationships between female participation in the labor force and fertility, but also notes that the relationship varies significantly within countries on the basis of such structural factors as income rewards.

Edmund Dahlstrom (1971) reviewing conservative, moderate, and radical issues in the Swedish debate on sex roles, has rejected the notion of a causal association between low fertility and female participation in the labor force. He notes that there was no marked association between birth-rates and labor market participation rates during the thirties, forties, and fifties, and that public statistics are not such that one may study the co-variance between these two factors among women in different age and marital status groups over recent decades. Dahlstrom also notes that findings indicating working women have fewer children do not suffice to suggest a necessary causal relationship. He also notes that career interests on the part of women have given rise to demands for facilities which would facilitate the combination of motherhood and employment.

From an economic standpoint, Mincer (1963) has formulated a conception of the relationship between female participation in the labor force and fertility similar to that which guides the present work. He notes that arguments of causality run both ways. On the one hand it is claimed that responsibilities of child care prevent women with more children from participating in the labor force, while on the other hand it is argued that women in the labor force restrict the size of their families. Mincer suggests from his economic perspective that choices of family size and labor force participation are not causally related to one another, but are rather choices simultaneously determined by the same "basic economic variables."

The higher the female wage rate, and the lower the husband's earning power, the higher the labor force rate and the smaller the fertility rate. The

relation between fertility rate and labor force participation is not considered autonomous; it does not provide new insight once the two structural relations are specified. Indeed, as the empirical findings indicate, a labor force variable introduced in addition to the income and price variable is redundant; it adds little or nothing to the explanation. (1963, p. 78-79)

This is essentially the theoretical perspective taken in the present paper; if the restriction of "economic variables" is lifted so as to include the social structural conditions of female employment, and summary indicators of the strength of family situation factors operating within the social system. These factors merit inclusion, as they affect probabilities or rates of labor force participation and fertility among women in the population of the social system. Despite the arguments of such sociologists as Judith Blake, Kingsley Davis, Cynthia Epstein, Alice Rossi, and Stanley Kupinsky, little work has been carried out regarding the relationships of female employment to fertility rates at the aggregate and structural levels.

DeTray (1973) studied 555 United States counties using 1960 census data. He considered factors of male and female education, housing equality, male median earnings, female median earnings, infant death rate, percent urban, percent rural, and race. Using ordinary least squares multiple regression methods, he found that female median earnings, rather than male median earnings, had the strongest effect on indices of fertility and children ever born, as well as on child quality as determined by public school investment in child education.

Gardner (1973) studying wife's wage rate, family income measured as a "permanent" annual flow of consumption services, wife's

schooling, husband's wage rate, and husband's education, among rural North Carolina families, found that increases in wife's wage rate, measured either as the wife's own wage rate or the wives' average rate for the country, was related to reduced family size.

Sammuel Preston (1972) worked with the question of women's earnings relative to men's, and with the extent to which the industrial structure in a given area tends to hire women. In a sample of Standard Metropolitan Statistical Areas in 1960, both variables were negatively related to fertility. In Preston's study, education was not found to have a strong effect on fertility when included in the multiple regression model.

The effect of income differentials between male and female employed workers on the relationship of cumulative fertility rates and labor force participation rates was investigated by Havens and Gibbs (1975). Essentially, their findings suggest that the negative relationship between female participation in the labor force and fertility becomes stronger as female salaries approximate male salaries.

Information from various communist countries suggests the possible effects of equality of occupational opportunity, although data are too sketchy for adequate determination of the actual extent of sexual equality in the occupational sphere.

The prospect of a causal relationship between occupational integration of women and fertility declines has been tested in practice in Red China. Kingsley Davis (*n.d.*) noted that the People's Republic of China has, and continues to pursue, anti-natalist policies, including de-emphasis on the family and the use of women in the labor force.

He observes that, in order to limit population growth, governments must alter conditions by increasing the availability of contraceptives, abortion, and sterilization, and by increasing female participation in the labor force. The latter effort must be such as to make women not only personally ambitious but also economically independent.

Tien (1970), reporting on Red China's anti-natalist policy, noted that, since the marriage law of 1950, marital postponement has occupied a unique place within China's social policy. He reports that, from the Chinese perspective, delayed marriage, unlike other means of fertility limitations, directly serves to channel the energies of young men and women into study and work, and can profoundly restructure the Chinese family.

E. Szabady (1968, pp. 387-408) has suggested that low fertility in Eastern Europe may be attributed to working women. E.A. Sadvokasova (1967) has also documented the inverse relationship of female employment and fertility trends. He observes that:

One of the most important causes of the decline in the birth rate in the economically advanced countries has been the change in the social status of women reflected in the entry to women in productive labor.  
(p. 111)

Observing further that the Constitution of the Soviet Union has given Soviet women equal rights with men in "all fields of life" (p. 111), Sadvokasova (1967) cites statistics indicating that women constitute 48 percent of the total employed population, and 39 percent of the labor force employed in industry and construction. Women constituted 61 percent of the labor force in trade, mass catering, procurement, supplies and marketing, 71 percent of the labor force in the fields

of education, science, and public health, 70 percent of all teachers, and 74 percent of all doctors.

Although claiming that in 1930 unemployment was eliminated from the USSR, as well as the Armenian SSR and that in the economic, cultural and scientific fields women in the Armenian Republic actively work side by side with men, Davtyan (1967) does not tie sexual equality in the occupational sphere directly to fertility declines. In his analysis of population change in the Armenian Republic, Davtyan emphasizes the influence of declines in the married proportion of the female population of childbearing age, as well as the decline of the fertility rate of married women, as causes for declines in natality rates. However, he does report on a survey of women in the City of Erevan carried out in 1963 which indicated that the mean fertility rate of employed women was 36.6 percent lower than the fertility rate of women not employed outside the home.

Urlanis (1967) reports similar findings as do Sadvokasova (1967) and Davtyan (1967), and more clearly stresses the social position of women in the Soviet Union as the "first which deserves note" of the social factors influencing the birth rate. However, he compares differential fertility of working women and dependent women rather than variations in societal rates based on variations in the structural conditions of female employment per se.

Mazur (1968) criticizes the studies of Uralanis and Sadvokasova noting that they did not cross-classify the data by education and marriage. Mazur suggests that the low age specific fertility rates of

working women could be due to the fact that a much greater proportion of these women may have attained higher levels of education, and may be more inclined to remain single, as compared with the dependent women. After reviewing data from various Eastern European countries and noting the tendency for working women to have lower fertility rates than dependent women, Mazur suggests

that under an economic system of rigidly controlled wages, the employment of women could be a spurious factor in its apparent relation to fertility. It is possible that low income of husband is the primary motivational force that induces the wife to take a job in order to help balance the family budget. This is apparently easier to accomplish by women who are childless or have no more than two children. The concern for children in the state-controlled system providing for their care is a secondary consideration. (1968, p. 311)

Continuing to direct attention to differential fertility by labor force status, Freedman et al. (1959) document the negative correlation between female labor force participation and fertility in West Germany. They report that on the average, working wives expect 0.4 fewer children than those who were not working, and that at the time of the study, working wives had an average of 0.6 fewer children than non-working wives.

Additional studies drawing on international sources regarding the inverse relationship between female participation in the labor force and fertility are summarized by the Department of Economic and Social Affairs of the United Nations (1973, p. 101-102).

In Chapter 1, it was suggested that probabilities of fertility, or societal fertility rates, would be negatively related to the degree to which employed women participated in the occupational

structure in the same distribution as males. Outside of the studies reviewed on the preceding pages, little or no work has been explicitly directed at this question. It has also been suggested that the relationship of such differentials to fertility rates may be confounded to the extent to which opportunities were present for adoption of secondary career occupational roles which would entail minimal conflict with familial obligations. Again, few studies have been explicitly directed to this question. Important to this type of question, however, are the works of various researchers concerned with role incompatibility as it may pertain to relationships of female participation in the labor force and fertility.

Stycos and Weller (1967) directed their attention to the lower strengths of the inverse relationship of female participation in the labor force and fertility characteristics of developing countries. Studying data for Latin American Countries and Turkey, they advanced the hypothesis that where female work and maternal roles are compatible, there will be no reduction in fertility, as an explanation for the lack of strong relationships in rural areas. If the roles are incompatible, the relationship they suggest would depend upon the availability of birth control technology. If such technology is unavailable, the relationship would depend upon self-selection by fecundity and marriage and would not be expected to be strong. Where birth control is available, they suggest that working women would reduce fertility to lower the strain of incompatible roles (p. 216). In a later article also concerned with a developing society, Weller (1968a) reports that research in industrialized countries indicates

a negative relationship between female employment and fertility, but observed that evidence from less developed countries was inconclusive. Linking role conflict and decreased fertility, the hypothesis was advanced, and subsequently supported, that the nature of female employment in less developed countries is such that joint occupancy of the roles of mother and worker does not involve a great deal of role conflict. Research which supported the hypothesis also suggested that white collar employment, normative orientations to women as mothers, and lack of available child care arrangement were aspects of role incompatibility. On the basis of these studies, Weller (1968a) concluded that female participation in the labor force per se may have little or no effect on fertility. He also suggested that efforts be made to increase white collar female employment as this had been found to be related to later age at marriage and lower fertility.

These recommendations are in conflict with the position which Weller took in a later paper reporting on studies to determine the extent to which increased rates of female employment in non-agricultural activities are associated with decreases in child-woman ratios in Puerto Rico since 1940. In that paper Weller and Sakoda (1971) concluded that as only slight negative relationships were found there is little value in advocating raising levels of female employment until longitudinal analyses are conducted which indicate that increases in the rates of female participation in the labor force are associated with decreases in fertility.

Additional support for Weller's and Stykos' (1967) hypothesis regarding the effect of role incompatibility on the

relationship between female participation in the labor force and fertility has been provided by the studies of Fererici (1968) in Italy and the work of Goldstein (1972) in Thailand. Fererici noted that in poor, agricultural, Southern Italy there is no relation between female employment and lower fertility, although the inverse relationship in the North is clear. After considering the proportion subfecund and the mean ages of employed women, Federici suggests that agricultural employment is not inconsistent with fertility, in the way that secondary or tertiary employment is.

Goldstein (1972) using a special tabulation of a 1 percent sample tape of the 1960 census to evaluate the relationship between labor force participation, education of women, and fertility in Thailand, compared rural and urban populations so as to investigate the question of role incompatibility. Women in farming (87.4 percent) had the highest fertility, followed by women who worked in crafts, professions and administrative work. Noting that the negative relationship was strongest in the urban areas, the researcher writes that:

This problem suggests that the greater the separation of work and family roles among employed women in the urban center lowers the fertility of urban working women, whereas the general absence of such conflict in rural society results in a minimum effect of labor force participation on fertility. (p. 43)

Although the preceding studies introduced the idea of role incompatibility by concentrating on the absence of this characteristic in agricultural areas, it need not be assumed that female employment in urban areas is necessarily incompatible with familial role obligations. Two types of factors are relevant here. The potential

for conflict may vary with the stage of the family life cycle, as this will suggest the extent and type of familial obligations incumbent upon the wife. The potential for conflict may also vary by type of occupation, as was suggested in the theoretical discussion of the confounding effects of the prevalence of secondary careers on the relationships between the other structural and familial situation variables suggested as differentially related to female participation in the labor force and fertility.

Woods (1959, pp. 504-504) has suggested that in the first years of marriage, employment by the wife need not represent a threat to the husband's status, particularly where the young people assume companionship roles. However, Woods suggests that later, when the husband is the major breadwinner, the family values may require realignment, and if the wife remains employed family harmony may be threatened by competition for prestige.

In a similar vein Nye and Hoffman (1963) suggest that when labor force participation is timed to coincide with periods of "low familial demands," labor force participation may be sanctioned as a secondary pastime. However, Nye and Hoffman (1963) would differ with Woods (1959) regarding the question of conflict due to competition for prestige. They claim that as a consequence of challenges to ideologies of male supremacy and responsibility, and of emerging equalitarian ideologies, the married woman, as a second wage earner, poses less of a threat to the husband. In addition they note that even where male dominance remains an accepted norm, employment of the wife is not inconsistent if her position is lower than her husband's

on the occupational hierarchy and so long as her employment yields a smaller portion of the family income (p. 5).

Bancroft (1958, p. 62-64) investigated the relationship between fertility and labor force participation of females, but from a perspective giving causation to fertility as the stimulus to change in the labor force. She in 1958 observed that "young women of today find little opposition to continuing their jobs after marriage" (p. 62). Thus, the proportion of single women decreased on an age standardized basis, while "increases in labor force participation were in age classes in which a high proportion were already married in 1940" (p. 62). It is then suggested by Bancroft that the pattern of female employment involved marriage in the early twenties, followed by removal from the labor force with the birth of the first child. Women who place a high value on a career may, it is suggested, postpone marriage and motherhood, but once a family is started the working woman is as likely as the housewife to have additional children.

Dahlstrom and Liljestrom (1971) have described the pattern of female employment in Sweden in light of the family life cycle. They suggest four stages. During the first phase, while the husband's income is low and housework demands are low, conditions are favorable for gainful employment of the wife. During the second phase, the husband's income has tended to rise, pressures of children have increased the housework demands, and the propensity for the wife to work outside of the home is reduced. During the third phase, the children are in school but the burden of financial need continues to increase, and thus the incentive of the wife to return to work is

increased. During the last stage, the children have left home to support themselves, and the burdens of financial need are reduced as are the demands of housework. As the financial need is reduced, so will be the propensity for the wife to return to the labor force. Rather than causing conflict under such circumstances, employment of the wife provides needed income. In support of the assumption that for married women labor force participation is economically motivated, Dahlstrom and Liljeström (1971) note that women married to men in the lowest income categories have relatively higher participation rates. They also note that when Swedish women were questioned they indicated that their motivation was economic. Work on the part of the wife may make it possible to satisfy certain indispensable needs such as housing and medicine, as well as contribute to fulfillment of status functions and future security. One should be cautious, however, in assuming that economic motivations are the only, or even primary, reason for female employment. Epstein (1970, p. 65) suggests that although women often cite economic reasons for working, this may be due to a felt need to justify working for some reason other than job satisfaction.

Hoffman (1963, pp. 18-39) studied factors involved in mothers' decisions to work. She observed that while a monetary motive is frequently cited, technological advances have made the housewife role less time consuming and satisfying, particularly when the youngest child has entered school. She observed that frustrating aspects of the maternal role itself might have motivated some women to seek employment. Clare (1957) concluded that women who felt with confidence that they would have no more children, either because of subfecundity or

experience with effective family planning, could make a more permanent commitment to their jobs. It is important to note that these studies indicate that employment may occur after childbearing, rather than causing delays in marriage and childbearing.

Mildred Weil (1961) suggests that important factors involved in the wife's decision to work include performance of an occupation before marriage, husband's professional or managerial status, and husband's attitude and willingness to adjust the division of labor in the home.

One manner in which the employment of wives may affect fertility is through changes in family structure. Whelpton, Campbell, and Patterson (1966, p. 258-259) report that a couple is more likely to have completely planned fertility if the wife has worked than if she has not. This is partly due to the fact that some wives married only a short time worked to save money before the arrival of the first child. Even among couples with children, however, the presence of a working wife is likely to mean more careful family planning, particularly if the wife is working because she wishes to. The researchers suggest that an interesting job for the wife motivates the couple to practice contraception carefully.

Weller (1968b) studied the effects of female employment on family dominance in San Juan. He advanced three hypotheses which received empirical support: 1) participation in the labor force was associated with increased influence of the wife in family decision making, particularly with regard to childbearing decisions; 2) increased influence in decision making was associated with lower

fertility among working wives and, 3) the negative relationship between fertility and female participation in the labor force is stronger among wife-dominant and equalitarian families than among husband-dominated couples. Weller concluded that the pattern of family decision making is a crucial intervening variable in the relationship between employment of wives and fertility.

In light of such findings it is interesting that Stycos' (1952) studies of family fertility in Puerto Rico indicated that the lower classes had preferences for small families but had high fertility. Cultural patterns countering low fertility ideals included: 1) a male role encouraged sexual appetites under economic conditions in which virility and fertility are major sources of prestige, 2) the subordinate position of women made them unable to prevent pregnancy despite preferences for small family size, and 3) the wide gulf between the sexes led to high levels of marital tension and fertility.

In 1956 Stycos suggested certain effects of poor communication between husband and wife. With poor communication there develops a tendency of each spouse to assume that the other does not care how many children they have, a failure to share birth control methods, and a failure to adopt birth control methods. Lack of communication was suggested as a result of excessive female modesty and of traditional male dominance. Goodman (1968), who studied psychological factors of different fertility and family planning types, noted that pregnancy may be a means to achieve security among women who hope that motherhood will provide love and self-esteem. Rainwater (1964), drawing on studies of four cultures of the poor dominated by Western

European culture, suggested that where there exists a high degree of family role segregation couples tend not to develop close sexual relationships. Wives may be less inclined to look upon sexual relationships as gratifying, but may desire sexual relationships as signifying continued stability of the marriage.

Talcott Parsons' (1949; 1954) functional analysis of Western families in which only the husband holds career employment has, until recently, been widely accepted. Andre Michel's (1971) study challenging Parsons' theory that differentiation and specialization of male and female roles enhances integration of the conjugal family is significant in that no Parsonian based hypothesis was supported. In a study of 450 Parisian families it was found that the less specialization and differentiation of domestic roles and decision making, the more likely high levels of integration. Measures of integration included: satisfaction of the wife, communication between husband and wife, and a greater chance that the desired number of children and family planning would be realized.

This issue was indirectly taken up by Blood and Hamblin (1958) who studied 160 Michigan couples, in 80 of which the wives were employed full time. Employed wives tended toward equalitarian authority expectations, and housewives tended toward traditional authority expectations. No statistically significant differences were found between the husbands. Husbands of working wives, however, were found to share in larger proportions of work than husbands of housewives. There were no significant differences in percentage of adopted suggestions offered by working wives and housewives.

Rodman (1965), reviewing Parsons' (1965) view of the changing American family, notes that while Parsons has recognized that women have increasingly entered the labor force, he responds to this as a special kind of phenomenon insofar as these are seen as women who either do not yet have children, or whose children are grown and independent. In addition it is suggested that these women are distributed in the less technological occupational roles. Rodman himself infers that in recent years the female is less likely to be forced into choosing either a domestic role or a career pattern, and argues that it has now become acceptable and possible for her to combine a variety of different role patterns during the course of her life.

In light of the work of Blake, Davis, Weller, and various other theorists and researchers cited over the preceding pages, it is useful to consider the nature of work available to females in the United States.

Eli Ginzberg (1968) has noted that of 33.8 million females employed in 1965, only about 39 percent worked full time the full year, and over 60 percent earned less than \$3000 and 25 percent earned between \$3000 and \$5000. Ginzberg concludes that: 1) except for those with small children, women are likely to be employed outside the home; 2) women generally work part time or part year; 3) an increasing percentage of females with small children are now working, and 4) mature women of 45-55 are most likely to be employed.

Gordon (1968) summarized the state of women in the labor force by citing two problems: 1) the low proportion of females in the professions, and 2) the inadequate education and training of girls

who become mothers too early. She attributes the low number of female professionals to lower levels of career aspirations among females, as well as to discrimination in professional education.

Epstein (1970b) has suggested processes by which sexual discrimination in the professions may operate. She notes that sex typing and status-set typing have led to male dominance of the professions. Enforcing these attitudes and further restricting female access to the upper echelons of the professions are: 1) the colleague system of the professions, 2) the sponsor-protege relationship, and 3) the inner structure demands of the specific professions including associations, beliefs involving dedication to the profession, and the exclusivity of the elite.

Astin (1969) found that the married woman doctorate was apt to be childless. Her family, if there was one, was usually small, averaging two children, and her childbearing started at a much later date than was the case with other females. Holmstrom (1972) studied 20 couples in the Boston area in which the husband and wife held professional positions. She concluded that although wives in such couples placed as much value on having children as did most Americans, their actual childbearing practices were atypical in three ways. They tended to have small families. Seventy-five percent had two or fewer children. There was likely to be a relatively long interval between marriage and the birth of the first child. Finally, most of the wives had their first child while in their late twenties or beyond.

Coser and Rokoff (1971) suggested that cultural mandates for women that they be committed primarily to family have led to conflicts

between work and home for the working female, and between the two activity systems. As a result, women are concentrated in occupations in which they are defined as replaceable and excluded from professions and higher positions. It is argued that equality of women would require a family structure in which men would be expected to be committed to their families in the same manner as would females.

Turner (1964) noted with regard to women's career ambitions, that because the major social status determinate of a woman is her husband's occupation some women may have no career ambitions, while others may choose a pseudo or secondary career. With few exceptions, the women he studied chose to add a special role rather than substitute a career for the traditional homemaker role. Turner suggested that so long as wives accept such a traditional assignment they cannot gain the intrinsic rewards of career accomplishment, as do their husbands.

Empey, in 1958, reported on a study of high school seniors and college undergraduates in the state of Washington. He found statistically significant support for the hypothesis that high school seniors and college girls preferred marriage to a career and were inclined to aspire to jobs traditionally held by females. It was suggested that young females may orient to both marriage and a career to follow should it become necessary.

Family situation factors such as tastes, husband's relative income, and marital parity have been suggested as influential on family decisions regarding female employment and childbearing. Much of the work which has considered family decision making processes has been carried out at the micro-economic level and it is to such economic

research and theory that attention must be here directed. Bankes (1954), evaluating fertility patterns in Great Britain over the period from 1870-1953, has suggested that a long run effect of a rise in average family incomes (presumably husbands' incomes) is an increase in aspirations for social advancement. This represents an increased desire for consumer goods which competes with the desire for additional children in light of family resources.

Of major importance to micro-economic theory of family fertility decisions is the work of Gary Becker (1960) who formalized the perception of children as "consumption" goods. He also distinguished the concepts of "quantity" of children and "quality" of children in a family's childbearing decision making. Central to Becker's formulations is the notion that tastes and values may be unchanged as income changes. In a later work Becker (1965) also suggested the inclusion of the concept of allocation of time in evaluating parents' perception of children as cost considerations.

The position taken in the present research holds that as the husband's income rises relative to the mean income for husbands age 35 to 45 in the same occupational group, the probability of childbearing by the wife increases. However, previous research on the effect of husband's income on fertility is confusing. Sanderson and Willis (1971) suggest that one should not assume, in the absence of more information, that the short run relationship of income and fertility is positive. Using the one in 1,000 sample from the 1960 United States Census tapes, and working with cell means of approximately 100 socioeconomic groups in three age levels, they found that at higher levels of women's education and husband's income, an

increase in husband's income produced an increase in the number of children, while at low levels of husband's income and wife's education an increase in income was associated with a decrease in fertility. Similar findings are reported by Ben Porath (1973) who tested the Sanderson-Willis hypothesis using Israeli household survey data. He found negative coefficients for husband's income and estimated wife's potential earnings on fertility, but a positive interaction term. It is possible, however, that the Israeli situation may be inappropriate for comparison with the more Western Countries, given the recent political, economic, and social situations of that nation.

Willis (1973) has suggested that within the context of economic theory the family is treated as a complex institution. Behavior of family members and the family unit is viewed as affected by preferences and capabilities of members in interaction with present and anticipated social and economic environments. However, he noted that no single testable model of the full range of family life-cycle behavior is yet feasible. Willis has also noted that the family may be viewed as both a demander and supplier of children. Directing attention to husband's income and wife's education, Willis observed an important empirical regularity in the cross-sectional relationship between fertility and measures of husband's income that has become apparent in the emergence of a U-shaped relationship between fertility and income. This U-shaped relationship has been observed in developed countries over past years. Higher-income higher-status socioeconomic groups have fertility rates higher than predicted by current income alone.

In Gardner's study of rural North Carolina families (1973), in addition to noting that increases in the wife's wage rates and schooling were associated with decreased family size, Gardner observes that husband's schooling and wage rate are both negatively related to family size, and that the negative effect of husband's school is significantly larger for families in which the wife does not work than for families in which she does. Of indirect importance to the present discussion, Gardner also observes that neither the wife's nor the husband's years of schooling are linearly related to family size. Among women, an increase in school from 0 to 4 years to 9 to 11 years reduces family size much more than increases from 9 to 11 years of schooling through college. Among males, the degree of non-linearity is weaker, and works in the opposite direction such that latter years of schooling reduces family size by more than earlier years of schooling.

Closely related to the present study, Cain and Weinger (1972), utilizing 1960 Census data for Standard Metropolitan Statistical Areas of 250,000 and above population in a multiple regression of children ever born on male income, female wage rate, female education, and region of the country, found a positive effect for income on children ever born. Noting that the relationship is stronger the younger the age group, they suggest that the major effect on income may be on timing rather than total number of births.

That the effect of husband's income on current fertility need not always be positive has also been indicated by the work of Cho (1970b). They note that for native whites, when fertility rates are standardized for education, "fertility is positively related to

income up to the income category of \$5,000-\$6,999 and then is negatively related, with a reversal at the highest income category" (1970b, p. 251). A "flattened" normal curve is suggested for urbanized areas, with the income category \$5,000 to \$6,999 having the highest fertility. In rural areas the highest fertility occurs within the \$4,000 to \$4,999 income category. For Negroes, in urbanized areas, when standardized for education, fertility is positively related to income up to income category \$3,000 to \$3,999, and thereafter negatively related. However, Mincer (1963), using 1950 Bureau of Labor Statistics survey data on urban white housewives whose husbands were fully employed, showed that when the earnings of the wife and the education of the husband are held constant, the relation of husband's income to fertility is positive.

As the present study deals with aggregate rates of fertility and female participation in the labor force, the work of Heer and Boynton (1970) and that of D. Freedman (1963) are of particular importance. Heer and Boynton studied differentials in fertility among United States counties in 1960, developing a multiple regression model utilizing "independent" variables of: 1) infant mortality in or around 1960, 2) proportion of 1960 population nonwhite, 3) median income of males among all males with income in 1959, 4) median years of school completed by persons 25 years of age or older, 5) proportion of females 14 years of age and over in the labor force in 1960, 6) the  $\log_{10}$  of the population potential of the county in 1960, 7) the ratio of males 20 to 54 to females 15 to 49, and 8) the proportion Roman Catholic. In the resultant multiple regression model the partial correlation of median male income with the standardized fertility ratio was only  $-.02$ ,

and the partial correlation of the proportion of females in the labor force was only  $-.073$ . This last figure may reflect the need to utilize finer categorizations of age in considering the relationship of aggregate rates of female participation in the labor force to fertility rates.

Deborah Freedman (1963) treated the question of the relationship of measures of husband's income to fertility. In her study the measure of fertility used was the number of live births preceding the date of interview. Two measures of husband's income were used. In the first place his actual income in the year preceeding the survey (1955) was considered. Second, his relative income, taken as a ratio of his actual income and that expected for him on the basis of "a regression on 1955 income of his occupation, education, age and residence in the South or elsewhere" (p. 417), was considered. The results of the regression indicated a positive relation with a beta of  $.24$  for husband's relative income on cumulative fertility, and a negative relationship with a beta of  $.21$  for husband's actual income on cumulative fertility. The former relationship is consistent with that which would be expected on the basis of the model developed in the present work in Chapter 1.

Finally the relationship of income to higher birth orders may be noted. Julian Simon (1974), reporting on the effect of income on successive birth orders using subclassifications of the 1/100 1960 U.S. Public Use Census Sample, and applying discriminate analysis within each cell, has observed that higher levels of husband's income are positively associated with the family having at least one child rather than none.. However, the relationship is described as moving

smoothly from positive to negative as one looks to higher birth orders. Finally, around the third or fourth child the relationship becomes negative. Simon (1974) concludes that other things being equal, "the effect of husband's income is curvilinear among people in the United States" (p. 65). Assuming that this interpretation recognizes the implied interaction of income and marital parity on probability of current fertility, these results also would be consistent with the predictions made in the model developed in Chapter 1.

The preceding pages have reviewed much of the theoretical and empirical work bearing on the concepts and propositions presented in Chapter 1. Although the importance of a longitudinal perspective has been suggested, empirical studies reviewed in the present chapter have largely been limited to cross-sectional considerations. It is useful, therefore, to devote explicit attention to longitudinal relationships among female participation in the labor force, fertility, and the social structural determinates of these. This, then, is the broad goal of Chapters 3, 4, and 5. Chapter 3 begins this task by directing attention to the findings of previous researchers regarding longitudinal trends of the social structural factors involved in the theoretical model developed in Chapter 1.

### CHAPTER 3

#### A REVIEW OF LONGITUDINAL RESEARCH REGARDING PATTERNS OF FEMALE PARTICIPATION IN THE LABOR FORCE, MARRIAGE, AND FERTILITY

Although relatively little work has been carried out to date regarding longitudinal interrelationships of female participation in the labor force, fertility, and the social structural determinants of these, a number of researchers have devoted extensive effort to documentation and interpretation of the longitudinal trends of these phenomena. It is the objective of this chapter to review the major contributions to empirical knowledge regarding these trends, with particular emphasis on the case of the United States for the period 1930 through 1970. It is hoped that a familiarity with this body of literature will facilitate comprehension and interpretation of the present researcher's longitudinal analyses to be reported in Chapters 4 and 5.

Gertrude Bancroft (1958) provides an excellent review of trends regarding the American labor force from 1890 to 1955. She observes that "The most important development has been the decline in the labor force participation of men of certain ages, which has been more than offset by the great increase in the labor force participation of women" (p. 28). Bancroft suggests that factors affecting the employment of women include the reduction of the work week to 40 hours, the vast expansion of clerical and sales jobs "for which women can be employed" (p. 29), technological advances regarding home appliances, and commercialization of housekeeping functions (p. 29).

Concerning age specific labor force participation rates of women, Bancroft (1958) observed trends toward increasing employment in all age groups with the exception of the teenagers for each sex (p. 30). A trend toward an older labor force was observed. For women workers the median age in 1955 was 28.5 as compared with 25 in 1890. Bancroft also reviewed the changing occupational structure of employment and noted that structural changes accounted for most of the increase in women in managerial, sales, clerical, and service jobs (p. 37). She also observed that there had been no movement toward skilled or crafts-persons positions, and a movement away from operative and laborer positions (p. 39).

With regard to family employment patterns, Bancroft (1958) reported that while most family heads in 1955 were year-round full-time workers, 13.1 percent of the wives of family heads worked full time full year. Part time and/or part year employment of women was common in 1950. According to Bancroft the majority of employed women of all ages were "secondary workers" (p. 118). Data presented by Bancroft suggest that in 1950 and 1956 those occupational categories in which secondary workers of both sexes comprised greater than 40 percent of all workers included the clerical, sales, service, and farm laborers and farm forepersons categories (p. 119). Finally, Bancroft also reported that data from the U.S. Census and from the Current Population Surveys indicate that the married woman's decision to enter the labor force is more strongly dependent upon whether or not she has young children at home than upon her husband's income (p. 124).

Leopold (1958) has also documented increases in female participation in the labor force. She noted that between 1940 and 1957 the percentage of married women over 35 increased 85 percent.

Knudsen (1969) reports on trends in sexual discrimination within the occupational structure. He has taken the position that while modern industrial society has destroyed traditional narrow definitions of female roles, discrimination has not ceased. As evidence, census data are reported for the period 1940 through 1966 which document decreasing proportions of females in the professional, technical and kindred workers class and substantial increases in the clerical, sales, service, and farm worker classes. Income was studied by comparing the ratio of female to male workers' incomes by each census occupational class. In all classes females received less income than males, and in only the professional class was the income discrepancy improved in 1966 by comparison with 1939. With regard to education it was concluded that while the proportion of female college enrollments had increased, men continued to be better educated, particularly with regard to degrees beyond the baccalaureate.

Gross (1968) applied Gibbs (1965) Standard Measure of Differentiation to sexual differentiation among specific occupational categories using census data regarding numbers of males and females in specific occupations for decennial years from 1900 to 1960. The Standard Measure of Differentiation, which will be used in the present study, may be roughly interpreted as the percentage of either sex which would have to change occupations in order that each sex would have the same standardized distribution among the occupational categories. Gross

observed that despite increased female participation in the labor force there is almost as much sexual segregation of occupations as 60 years previous. Increases in the proportion of women in the labor force without reductions in the level of sexual segregation resulted from expansion of heavily female occupations, continued and increasing segregation of already male occupations, movement of females into previously heavily male occupations, and creation of new occupations initially defined as female. Gross further observed that comparisons of mean amounts of segregation within major occupational categories suggested that such reductions as had taken place were largely a result of desegregation of heavily female occupations, simultaneous with continued and increasing segregation of such heavily male occupations as farmers and farm managers, managers, officials and proprietors, clerical and kindred workers, sales workers, craftspersons, farm laborers and forepersons. Gross also noted that there was little change in segregation over time for occupations within the professional and operative categories.

Reviews of past studies may also provide information regarding longitudinal trends in ideal and actual family size. Freedman and Goldberg (1955) reported on a probability sample of adults in metropolitan Detroit in 1954, and compared these findings with those of 1952. For both studies consensus centered on the two to four child family, although the mean ideal family size was slightly but significantly lower in 1954.

Yeracarir (1959) reported on a study of a random sample of new mothers in Buffalo, New York, interviewed in 1956. Although income, education, and occupation were related to ideal family size, most

mothers were found to prefer two, three, or four children. In addition it was noted that fertility values expressed by young mothers were lower than those expressed by older mothers.

Longitudinal trends were investigated by Whelpton, Campbell, and Patterson (1966, p. 34) who compared American Institute of Public Opinion data for 1941 and 1945, and Growth of American Families data for 1955 and 1960, regarding number of children respondents considered ideal. Average ideal numbers of children for those years were reported to be 3.0, 3.3, 3.4, and 3.5, respectively. Over this same period the most popular number of children increased from two in 1941 to three in 1945, and four in 1955 and 1960. Both indicators suggested a clear tendency toward a larger ideal number of children, at least until 1960.

Similar findings using the same data were reported by Musham (1956). In addition, their analysis of data from the Indianapolis study of 1941 indicated that the mean husbands' desired number of children was 2.177 and the mean wives' desired number of children was 2.359.

Blake (1966; 1967) also traced longitudinal trends in mean ideal number of children. Gallup Poll, Roper Poll, and Growth of American Families data were presented which traced mean ideal numbers of children from 1936 to 1966 for the United States. It may be noted that in 1936 females reported an ideal number of children as 3.1 and males reported this ideal as 3.2. In 1966 the figures are 3.4 and 3.2, respectively. Of course, there was some variation over the period for both females and males. The maximum reported ideal number of children for females was 3.6 in 1959 and 1961, and for males was 3.5 in 1959.

Her data regarding these trends are presented with her methodological notes in Table 1.

In 1954 Whelpton used cohort fertility tables for cohorts 1875-79, 1875-1904, and 1905-1909, in order to evaluate changes in family sizes. Although the overall trend appeared downward, five year cohorts from 1910 to 1934 indicated an upward trend in family size. He recognized a decrease in age at marriage but suggested that this could not explain the changes in family size. Hammons (1957) turned to census data for 1940 and 1950 and found that in 1950 the mean size of families was increasing. There were fewer childless families than in the past, and between 1940 and 1950 the marriage rate rose sharply, particularly among the educated.

Glick studied the move toward the two or three child family from 1940 to 1953 (1957, p. 37). On the basis of census reports he concluded that over that period the proportion of families with two or three children increased while the proportion with less than two or more than three children declined. He also noted that over this period there was an increase in employment of wives from one out of eight to one out of five, and that the lowest rates of female employment during the childbearing years were in the age groups under 25 (p. 90, 91).

Longitudinal trends of age at marriage in the United States have also been studied. Hill (1970) studied intergenerational family development and found evidence of a decrease in age of husbands at marriage. Mean age of husbands in the grandparent generation, married in 1907, was 25.3 years. The mean age at marriage for husbands in the parent generation was 25 years. In the married children generation

TABLE 1. MEAN IDEAL FAMILY SIZE, WHITE MALES AND FEMALES, UNITED STATES, 1936-1966\*

Date	Age Range	Females	Males
1936	21	3.1	3.2
1941	21	3.2	3.2
1943	20-34	2.7	
1945	21	3.5	3.5
1947	21	3.2	3.3
1948	18-25	3.1	2.9
1948	40-55	3.4	3.2
1952	21	3.3	3.3
1953	21	3.4	3.2
1955**	18-39	3.3	3.1
1955***		3.5	3.2
1957	21	3.4	3.3
1959	21	3.6	3.5
1960		3.4	
1960	18-39	3.5	3.2
1961	14-23	3.6	3.1
1963	21	3.5	3.4
1966	21	3.4	3.2

\*All of the Gallup polls (those dated 1936, 1941, 1945, 1947, 1952, 1957, 1959, 1963 and 1966) except the Gallup Youth Study of 1961 asked the following question: "What do you consider is the ideal size of a family-- a husband, wife, and how many children?" The Gallup Youth questionnaire (1961) asked: "How many children would you like to have?" The Roper Poll of 1943 asked: "How many children would you like to have if you had your choice?" and that of 1948: "How many children do you think makes the nicest size family?" The Growth of American Families Studies of 1955 and 1960 inquired concerning "the ideal number of children for the average American family." The minimum distribution arises from coding range answers (e.g., "two or three") to the lowest figure, and the maximum results from coding them to the highest figure. For men, the 1955 and 1960 data are responses by wives about the number their husbands wanted and the ages given are those of wives who were interviewed.

\*\*Minimum

\*\*\*Maximum

married in 1953, husbands' mean age at marriage was 22.4 years. For the same generations the parents were married an average of 6.58 years, 9.8 years, and 6.83 years, respectively, when the third child was born. Depending upon whether the third generation goes on to have more children, and with what spacing, it may be that a trend toward an earlier duration of marriage by the birth of the last child would become operative. With regard to number of children per family, the grandparent generation averaged 5.2 children with the last child being born an average of 14.6 years after marriage. For the parent generation mean family size was 3.5 children and the last child was born 10.4 years after marriage. The married child generation had an average of 2.4 children with 20 potential years of childbearing remaining. Reporting on labor force participation of wives, Hill also observed that the percentage of wives in the labor force, at each point in time throughout marriage, was higher by succeeding generations. However, for each generation a sharp drop in labor force participation of wives appeared following two to three years of marriage, and an increase began after five years of marriage (p. 97).

Marriage rates, age at marriage, and birth rates for five European countries, Canada, and the United States, were studied by Kiser (1959, p. 65-83). All countries followed patterns of fertility similar to that of the United States, which generally increased from 1933 to 1946, and declined until 1957. Kiser related these changes to economic recovery from depression, war spending, and the creation of new jobs.

Median age at first marriage declined for all countries from 1930 to 1950. The United States had a median age at first marriage of 20.2 years in 1950, 1.1 years lower than the median age at first marriage for the United States in 1930 (Kiser, 1959, p. 67).

Parke and Glick (1967) reported more recent trends in marriage and family statistics which indicated continued decreases in teenage marriage rates, increases in mean female age at first marriage, and declines in mean size of families. Decreases in the proportion unmarried in the population were also reported.

Variations in age at marriage at given years may have more of an effect on period fertility rates than on cohort fertility rates. Veevers studied two groups of women with regard to the relationship of childlessness to age at first marriage. After studying women from rural agricultural Quebec and urban British Columbia, believed to have known high and low fertility, respectively, Veevers (1971) concluded that at least for women who marry before age 35, variation in childlessness should be explained in terms of psychological rather than physiological factors. He reported finding a 94.8 percent probability of an urban teenage bride having a child as compared with a 71.6 percent probability for the urban bride in her mid-thirties.

In 1958 Kiser reported on long range trends in fertility, marriage, and family size in the United States. At that time he noted that the birth rate declined from 1800 to 1932, and in 1933 the marriage rate was the lowest on record. However, over the period 1933 to 1950 marriage and birth rates increased. Kiser noted that fertility increased sharply among younger women after 1940. Among married couples

there was also reported a trend toward increases in mean size of families. This increase was suggested as due to the increases in the number of families with three to four children, rather than to increases in families with five or more children.

The importance of considering both period and cohort measures is emphasized by the works of Goldberg (1967), Kiser (1958), Blake (1967), and Ryder (1969). Goldberg noted that although the crude birth rate, a period measure, declined from 1957 to 1966, cohort measures of the number of children ever born by age suggested increasing fertility. He argued that changes in period fertility measures between 1955 and 1967 should be attributed to changes in age at marriage, proportions marrying, and the spacing of births. Similar observations regarding factors affecting period and cohort fertility measures were made by Kiser (1968, pp. 237-254) in his longitudinal study of economic factors and fertility.

Judith Blake (1967) analyzed the drop in birth rates in the mid-sixties, and also recognized the importance of consideration of timing and spacing in interpretation of annual birth rates. Using cumulative fertility tables, she noted that family size increased from 1959 to 1965 at each five-year age level of wives. Cumulative fertility rates for women in the 40-44 years of age category were 2426.6 in 1959 and 2831.2 in 1965. Blake, therefore, suggested that the mid-sixties fertility declines were explainable in terms of age structure.

Data have been presented by Ryder (1969) on United States cohorts born between 1891 and 1945 regarding fertility, nuptiality,

and parity rates, as well as standardized mean ages of fertility and nuptiality. The standardized mean age of nuptiality tended to decline from 23.10 for birth cohort 1896-1900 to 21.55 for cohort 1941-45, despite slight increases for cohorts 1901-05, and 1941-45. Mean age of fertility declined from 27.54 for birth cohort 1891-95 to 25.94 for birth cohort 1936-40, although birth cohorts 1906-10, and 1911-15, exhibited higher ages than the preceding cohorts. Total nuptiality rates increased for each succeeding cohort, from .91 for birth cohort 1891-95 to .98 for birth cohort 1936-40, suggesting that higher proportions of women in succeeding cohorts were married at least once.

Cohort total fertility and cohort mean marital parity followed a curvilinear pattern. Total Fertility Rates decreased for succeeding cohorts from 1891-95 to 1906-10. However increases occurred for birth cohorts 1911-15 to 1936-40. Estimates for cohort 1941-45 suggested the possibility of a new decline. A similar pattern is observed for cohorts' mean marital parity. Mean marital parity declined from 3.27 for cohort 1891-95 to 2.47 for cohort 1911-15, but increased thereafter to a new high of 3.42 for cohort 1931-35.

In summary, various longitudinal patterns appear documented in the literature. The last few decades have witnessed increasing participation of females in the labor force. Sexual discrimination among occupational roles may have changed only slightly, and may have actually increased, while the overall status of women has been suggested as declining. If these observations are accurate, it is not surprising that other studies have indicated continued acceptance

of the wife and mother roles by females, although contingency planning for a career may be more common today than in the past. Period measures of fertility changed in the direction of increasing fertility from the early 1930's to the late 1950's, before beginning a downward trend which continued until 1970. The number of children considered ideal for a family has remained concentrated in the two to four child range, but has varied over time. The three or four child family may have increased in popularity in the decade from 1950 to 1960.

Cohort analyses of fertility patterns offer conflicting results. Earlier childbearing may be more common, and families may be completed sooner than in the past. However, there are indications that mean family size may have increased until the decade of the sixties. This increase may have been due to increased popularity of the three or four child family. In the United States age at first marriage has tended to decline and the proportion marrying has generally increased, although recent estimates suggest the possibility of a reversal of these patterns.

## CHAPTER 4

### LONGITUDINAL TRENDS IN FEMALE LABOR FORCE PARTICIPATION BY AGE, STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT, AND AGE SPECIFIC RATES OF FERTILITY

The theoretical perspective which stimulated the present research involved the proposition that fertility would be reduced under circumstances in which the occupational structure provided alternatives to the wife and mother roles. The present chapter reviews the changing nature of the occupational structure of the United States between 1930 and 1970, with regard to changing proportions of women by occupational category, changing age specific rates of female participation in the labor force, and changing income rewards. Trends and variations in age specific fertility rates and Total Fertility Rates for the United States are also reviewed, in preparation for development of hypotheses reflective of the theoretical propositions offered in Chapter 1.

The data from which changes in various aspects of the occupational structure may be ascertained have been drawn from publications of the Women's Bureau of the United States Department of Labor, the United States Department of Labor, the Department of Commerce, Bureau of the Census, and other agencies and divisions of the federal government. Statistics pertaining to fertility rates by age group were obtained from the United States Department of Health, Education, and Welfare publications. These publications are more completely and efficiently cited in the appendix, accompanying tables of the actual data.

In addition to familiarizing the reader with the changes in the structure of female employment over the past 40 years, this review will permit the introduction of summary indices which essentially serve to operationalize certain of the structural concepts involved in the proposed theoretical model. Formulae for calculation of the various indices are reported in the Appendix. Following reviews of longitudinal variations in these indices, it will be possible to observe correlations in trends over time, and the correspondence of these correlations with the predictions of the theoretical model. Correlations may not be actually "tested" for statistical significance using the available longitudinal data due to the inconsistencies in intervals between observations, as well as occasional inconsistencies in the governmental definitions of various categories and indicators. Nonetheless, observation of similarities in trends over time should certainly shed light on the plausibility of longitudinal propositions involving structural conditions of female employment, rates of female participation in the labor force, and fertility.

In order to facilitate comprehension of the patterns which have obtained, two statistical techniques are employed as descriptive summary statistics of the trend of the variable in question over time. To the extent to which the pattern of change over time has been linear (i.e. that the amount of change over time intervals of equal length is constant) the slope of the regression line expressed in Formula 2 may be

$$Y = a+bX$$

Y = the variable index in question

X = the year (time) of observation

considered as adequately describing the trend over time. Unfortunately, longitudinal trends of social indicators are not limited to linear progressions. In order to indicate the extent to which the regression line adequately describes the trend it is necessary that a statistic be utilized which will reflect deviations from the assumption of linearity. Pearsonian  $r$  correlation coefficient is adequate to serve as an indicator in that it will move in the direction of 0 to the extent to which points fall off of the regression line, and thus deviate from the linearity assumption.

The  $r$  coefficient may be reduced due to types of deviations from linearity over time. In the first case the overall pattern of changes from observation to observation follows a generally linear trend, but the amount of change over a constant time interval is highly inconsistent. In the second case a fairly consistent curvilinear trend may be obtained. Pearsonian  $r$  would underestimate the consistency of the trend. The third case involves a highly inconsistent curvilinear relationship. Finally, the  $r$  coefficient may be reduced due to random variations in change over time.

In order to avoid confusion of such patterns, written description will be used to supplement the descriptive statistical indices. In addition, whenever available data permitted, slopes of regression lines over time, as well as the Pearsonian  $r$  coefficients of that line, are presented both for the period 1930 to 1970, and for the period 1946 to 1970. The latter period is considered separately in order that trends may be suggested which do not reflect distortions due to the effects of the Depression and World War II.

The Changing Age Structure of the Female Labor Force

Table 2 documents the increases in the female participation in the labor force over the period 1930 to 1970. The number of women in the labor force increased an average amount of 504,011 women per year. The trend was essentially linear, as indicated by the .97 Pearsonian  $r$  correlation. For the period 1947 to 1970 the average amount of increase was 596,439 women per year. The Pearsonian  $r$  coefficient increased to .99, reflecting the removal of slight distortions imposed by rapid increases in the number of women employed during the period of World War II.

More important than increases in the actual number of women working are the increases in percentages women comprised of all workers, and percentages of women from each age category in the labor force (i.e. age specific labor force participation rates). The percentage women comprised of all workers increased in a somewhat steady manner from 1930 to 1970, with an average amount of increase of 0.36 percentage points per year. The consistency of the linearity of the trend was indicated by the .90 Pearsonian coefficient. Distortion due to the war year figure (1945) was removed by consideration of the period 1947 to 1970. For this period the average amount of increase in the percentage women comprised of all workers was 0.41 percentage points per year. The highly linear nature of the trend was indicated by the Pearsonian  $r$  coefficient of .99.

The labor force participation rate of all women followed a similar pattern, as would be expected to the extent to which the percentage of all men working remained relatively constant. The

TABLE 2. LONGITUDINAL TRENDS IN NUMBER OF WOMEN WORKERS, WOMEN AS A PERCENTAGE OF ALL WORKERS, AND LABOR FORCE PARTICIPATION RATES OF WOMEN WORKERS.

Variable	Pearsonian r 1930-1970	Slope 1930-1970	Number of Years for Which Data Were Available	Pearsonian r 1947-1970	Slope 1947-1970	Number of Years for Which Data Were Available
Number of Women in Labor Force	.97	504011	28	.99	596349	24
Women as Percentage of All Workers	.90	.36	27	.99	.41	24
Labor Force Participation Rate, All Women	.96	.43	27	.99	.44	
Age Specific Female Labor Force Participa- tion Rates						
Age Below 18	.45	.27	26	.01	.003	24
Age 18-19	-.05	-.02	26	.02	.004	24
Age Below 20	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Age 0-24	.62	.27	27	.84	.47	24
Age 25-34	.71	.29	26	.91	.44	24
Age 35-44	.95	.55	26	.98	.54	24

TABLE 2 - CONTINUED

Variable	1930-1970		1947-1970		1947-1970		Number of Years for Which Data Were Available
	Pearsonian r	Slope	Pearsonian r	Slope	Pearsonian r	Slope	
Age 25-44	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Age 45-54	.97	.92	.97	.89	.97	.89	24
Age 55-64	.98	.87	.99	.90	.99	.90	24
Age 45-64	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Age 65 and Over	.63	.06	.34	.03	.34	.03	24

slope of the regression line from 1930 to 1970 indicated that the percentage of women who were in the labor force increased an average amount of 0.43 percentage points per year. The trend was highly linear, with the major distortion being the percentage in 1945. After that date the rate dropped to a level consistent with the previous pattern indicated by the measurements for 1930 and 1940. Considering the period 1947 to 1970 the average amount of increase was 0.44 and the Pearsonian coefficient was .98.

Statistics pertaining to trends in age specific labor force participation rates of women are also presented in Table 2. The labor force participation rates of women in the two youngest age categories increased sharply from 1940 to 1945, but following World War II both groups entered a period of cycles which yielded little net change. However, from 1964 to 1970 the rates of both groups increased more consistently.

Age groups 20 to 24 and 45 to 64 reflected greater average amounts of increase per year, as well as greater linearity in the trends. Age group 20 to 24 increased its labor force participation rate sharply from 1930 to 1945, declined sharply in 1947, and then began a cyclic pattern which continued to 1959. After 1959, labor force participation rates of age group 20 to 24 began a series of increases such that by 1970 the rate had increased to 57.8 percent from a level of 45.2 percent in 1959. Generally, the older age groups also exhibited increases over the period 1930 to 1970, but reflected greatest consistency for the period 1947 to 1970. However, the oldest age group, that for women 65 years of age and older, was less consistent

and followed a general pattern of irregular increases from 1930 to 1956, after which tendencies toward reductions were observed.

In summary it may be suggested that the most rapid increases in labor force participation rates occurred among women in the 45 to 55 and 55 to 64 year old age groups. Smaller average increases were observed for age groups 25 to 34 and 35 to 44, although these also exhibited basically linear trends. The labor force participation rates for age groups 20 to 24 also increased over the period, although somewhat inconsistently. For this category, a stable pattern of increases began only after 1959. Overall, age specific female labor force participation rates suggest that while the female labor force expanded over the period 1930 to 1970, this was primarily due to increased labor force participation among women 35 years of age and older, rather than to increased labor force participation of younger women whose work experience would have been expected to have the more marked effect on fertility.

#### The Changing Roles and Status of Women in the Occupational Structure

Previously cited researchers have noted the increasing rates of female participation in the labor force, have associated these with the expansion of essentially white collar occupational categories, and have noted the trends regarding sexual occupational discrimination. In the present section the changing occupational distributions of workers will be documented, as will be the changing economic status of employed women vis-a-vis employed men. These considerations will permit appraisal of the degree to which changes in the occupational structure

have provided, or have failed to provide women with realistic alternatives to traditional wife and mother roles.

Tables 3 and 4 provide statistical summaries of longitudinal trends in percentage distributions of the total employed labor force and the female employed labor force, among the major census occupational categories. These data on occupational structures are essential background for evaluation of hypotheses and correlations discussed in Chapter 5. Consistent linear increases in the proportion of employed workers engaged in the professional, clerical, and service occupational categories were observed for the period 1947 to 1970. Over this period the professional category increased its proportion of the employed labor force by an average amount of .34 percentage points per year. The clerical category increased its proportion an average amount of .23 percentage points per year, and the service category increased by an annual average amount of .15 percent.

Declines were observed for the farming categories. The farmer and farm manager category declined an average amount of -.28 percentage points per year. The farm laborers and farm forepersons category declined an average amount of -.41 percentage points per year.

Other categories suggested less consistent trends. The managers and proprietors category increased from 1930 to 1950, declined to 1954, generally increased from 1954 to 1964, and thereafter declined to below the level of the 1940 figure. The sales workers category tended to follow a curvilinear pattern of increases until 1958, after which a period of net declines obtained. The crafts-persons and kindred workers category presented an irregular pattern

TABLE 3. LONGITUDINAL TRENDS IN PERCENTAGE DISTRIBUTION OF EMPLOYED LABOR FORCE.

Percentage Distribution Employed Labor Force Both Sexes	Pearsonian r 1930-1970	Slope 1930-1970	Number of Years for Which Data Were Available	Pearsonian r 1947-1970	Slope 1947-1970	Number of Years for Which Data Were Available
Professionals	.94	.24	17	.99	.34	15
Managers	.48	.04	17	-.24	-.02	15
Clerical	.63	.12	17	.98	.23	15
Sales	.20	.007	16	.27	.011	15
Craftspeople	.053	.004	17	-.31	-.032	15
Operatives	-.08	-.009	17	-.77	-.109	15
Laborers	-.85	-.15	17	-.84	-.10	15
Private Household Workers	-.85	-.09	17	-.62	-.05	15
Service Workers	.96	.13	16	.97	.15	15
Farmers and Farm Managers	-.9975	-.27	12	-.994	-.28	11
Farm Laborers and Farm Forepersons	-.99	-.17	12	-.96	-.14	11
Farmers and Farm Managers Laborers and Forepersons	-.99	-.45	17	-.99	-.41	15

of changes. This category reached a peak in 1954, but declined in its percentages of the employed labor force from 1958 to 1962. The percentages increased over the remaining years. Irregularities were also observed for the operatives category, which tended to increase its proportion of the employed labor force from 1930 to 1947, but generally declined thereafter. The laborers category generally exhibited irregular declines over the entire period. The proportion of the employed labor force engaged in private household work tended to decline from 1930 to 1970, but leveled off from 1947 to 1954. For this category irregular changes occurred from 1954 to 1962, and sharp declines obtained thereafter.

Table 4 directs attention to longitudinal trends in the percentage distributions of employed women over the periods 1930 to 1970 and 1947 to 1970. These data suggest more explicitly those occupational categories into which women tended to become concentrated. The percentage of all employed women comprised by the professional category declined sharply from 1940 to 1945, but began fairly steady net increases thereafter. Between 1947 and 1970 the average amount of increase was 0.19 percentage points per year, with a Pearsonian  $r$  coefficient for the period of .93.

With only women considered, the trend of the managerial category became more clearly defined, but continued to be curvilinear. The pattern involved increases from 1930 to 1950, stability from 1952 to approximately 1963, and declines to 1970. The proportion of employed women comprised by the clerical category increased in a basically linear pattern from 1940 to 1970. For the period 1947 to

TABLE 4. LONGITUDINAL TRENDS IN PERCENTAGE DISTRIBUTION OF EMPLOYED WOMEN WORKERS.

Percentage Distribution of Employed Women Among Occupational Categories	Pearsonian r 1930-1970	Slope 1930-1970	Number of Years for Which Data Were Available	Pearsonian r 1947-1970	Slope 1947-1970	Number of Years for Which Data Were Available
Professionals	.52	.08	19	.93	.19	15
Managers	.43	.03	19	-.85	-.04	15
Clerical	.80	.24	19	.93	.30	15
Sales	-.20	-.01	18	-.59	-.05	15
Craftspeople	-.03	-.0009	18	-.15	-.005	15
Operatives	-.83	-.24	18	-.81	-.25	15
Laborers	-.70	-.20	16	-.47	-.02	13
Private Household Workers	-.82	-.27	19	-.81	-.18	15
Service Workers	.95	.20	18	.94	.20	15
Farmers and Farm Managers	-.96	-.05	12	-.89	-.06	11
Farm Laborers and Farm Forepersons	-.90	-.09	13	-.88	-.14	11
Farmers and Farm Managers Laborers and Forepersons	-.87	-.17	18	-.95	-.17	15

1970 the average amount of increase was 0.3 percent, and the Pearsonian coefficient was .94. As with the total employed population, the percentage of employed women comprised by the sales category presented a highly irregular, generally curvilinear pattern, which involved increases from 1945 to 1947, little change from 1947 to 1960, and declines through 1969. The 1970 figure indicates a sharp increase.

The craftspersons category at no point comprised more than 2 percent of all employed women. The operatives category generally indicated a pattern of declining percentages from 1945 to 1958, and irregular fluctuations thereafter. The laborer category exhibited only small changes over the period 1930 to 1970, but a basically declining pattern was suggested by the data. The private household workers category and the farming categories follow basically linear patterns of decline in their proportions of all employed women.

In addition to the professional and clerical categories, the only category into which women consistently tended to become concentrated was the service category, which increased its percentage of the employed female population in a highly linear manner. For the service category the average amount of increase per year was .204 percentage points, and the Pearsonian  $r$  coefficient was .95.

Preceding data describe the percentage distributions of the total employed labor force, and the employed female labor force. In order to ascertain the extent of differentials in sexual distributions among occupational roles, or occupational sexual discrimination, attention should be directed to the longitudinal trends in the proportions female workers comprise of each major occupational

category. To the extent to which male and female percentage distributions of employed workers differ, one or the other may come to dominate certain occupational categories. From consideration of the percentage female workers comprised of each category, a standardized measure differentiation may be calculated. The Standard Measure of Differentiation is that technique which has been attributed to Gibbs (1965) and which was applied by Gross (1968) to occupational distributions in the United States for the period 1900 to 1960.

Although Gross's findings have been reviewed, his actual findings were not used in the present study as only decennial years were represented, and the present researcher sought to observe the trend at shorter intervals. The amount of segregation reported in the present study is considerably lower than that reported by Gross, as data regarding occupational categories were utilized. The SMD figures reported here underestimate the amount of segregation as they are only sensitive to between groups variations and insensitive to within groups variations. The advantage is that a larger number of years of observation may be obtained, for consideration of trends in the Standard Measure of Differentiation.

The procedure by which the Standard Measure of Differentiation, hereafter designated SMD, is calculated may be conceptualized as standardization of frequencies in an  $m$  by  $n$  matrix, where  $m$  is the number of sexes (2), and  $n$  is the number of occupational categories. Once the frequencies are standardized by percentaging each sex by category, the percentages of each sex are then summed, and the standardized percentages of each sex by occupational category are

obtained. The sum of the absolute values of the differences in these percentages by each category is calculated and divided by two in order to obtain the SMD value. This value may be interpreted as the standardized percentage of either sex which would have to change occupational categories in order that each sex would have the same percentage distribution among occupational categories.

When data with which one is working are already in the form of the percentage of workers in each occupational category which are of a given sex (in the present case female) the percentage female may be subtracted from 100.0 in order to obtain the percentage male, for each occupational category. The percentages male and female may then be respectively summed as above, and percentages within each sex for standardized frequencies. The SMD value may then be calculated from these, as above.

Consistent with the work of Knudsen (1969), Gordon (1968) and Epstein (1970b), as indicated in Table 5, the proportion female of all professional workers declined over the period 1930 to 1970, at the average amount of  $-.26$  percentage points per year. However, the trend entails a curvilinear pattern of declines obtained for the period 1930 to 1959, after which time a slight upward trend began. The upward trend, beginning about 1960, may reflect the expansion of emerging professions, possibly health professions among others, which may have been initially defined as female. Thus, the upward trend does not necessarily indicate that women have gained entry to the higher professions.

TABLE 5. LONGITUDINAL TRENDS IN PERCENTAGE FEMALE WORKERS COMPRISED OF ALL WORKERS BY OCCUPATIONAL CATEGORY

Employed Women as Percentage of all Employed Workers in Category	Pearsonian r 1930-1970	Slope 1930-1970	Number of Years for Which Data Were Available	Pearsonian r 1947-1970	Slope 1947-1970	Number of Years for Which Data Were Available
Professionals	-.79	-.26	18	-.35	-.07	15
Managers	.71	.15	18	.58	.05	15
Clerical	.90	.72	18	.97	.63	15
Sales	.16	.08	17	.48	.12	15
Craftspeople	.49	.04	18	.69	.06	15
Operatives	-.08	-.02	18	.69	.12	15
Laborers	.43	.06	14	.60	.15	12
Private Household Workers	.74	.45	18	.63	.19	15
Service Workers	.95	.57	17	.97	.62	15
Farmers and Farm Managers	.37	.03	13	-.008	-.001	11
Farm Laborers and Farm Forepersons	.61	.45	13	-.17	-.18	11
Farmers and Farm Managers Laborers and Forepersons	-.24	-.11	7	-.84	-.14	5
Standard Measure of Differentiation (SMD)	.07	.023	18	.80	.26	15

Although women tended to increase their proportion of the managerial category over the period 1930 to 1970, the majority of the increases occurred between 1930 and 1945.

In contrast is the consistency of the linear increases in the proportions of the clerical category comprised by women. In this category the percentage female increased over the entire period. The period 1947 to 1970 the increase averaged .63 percentage points per year, with a Pearsonian  $r$  coefficient of .97.

Between 1947 and 1970 the percentage of the sales category comprised by women fluctuated from a value of 40.0 in 1947 to 36 in 1958, and rose to 43.0 in 1969. The percentage female of all crafts-persons increased slightly but irregularly over that period, changing from a low of 1.3 percent in 1930 to highs of 5.0 percent in 1945 and 1970. Although, the operative category generally reflects slightly increasing percentages of women, deviations from linearity are considerable. It should also be noted that the most rapid increases occurred between 1965 and 1969, during which time the percentage female of this category increased from 27.7 to 31.2. From 1930 to 1969 changes in the percentage female of the laborer category fluctuated between 2.0 and 4.0 percent, however, a sharp increase was found for 1970 when the percentage female was found to be 8.36 percent.

Large and relatively consistent increases occurred in the percentages female of household workers and service workers categories. The percentage female of the private household workers category rose from 92.0 in 1947 to 99.0 percent by 1959. The percentage women comprised of the service category increased particularly rapidly and

consistently compared with other categories. Major deviations from linearity occurred only with the sharp rise to 48.0 percent in 1945, followed by a sharp decline to 44.0 percent in 1947. The average amount of increase from 1930 to 1970 was .57 per year, and Pearsonian  $r$  coefficient was .95. Finally, it may be observed that the farming categories exhibited slight declines, however, there are no clear patterns.

In summary, the proportions women comprised of each occupational category generally tended toward net increases. However, in only the clerical and service categories were the average annual amounts of increase greater than .21 of a percentage point. In the clerical category, the average amount of increase was .63. In the service category, the annual average was .62. In both categories the trends were sufficiently linear that the Pearsonian coefficients were above .97.

Table 5 also reports the SMD values calculated from the preceding data. Viewed longitudinally the SMD values formed a curvilinear pattern of net increases from 1945 to 1962, followed by a leveling period with small declines to 1969. A rise of 1.45 points during the final year of observation brought the SMD to a value of 51.53 in 1970. Overall, these findings, together with those above, suggest the post World War II years as a period in which the status of women declined, while women's occupational alternatives narrowed.

The changing status of women may also be viewed in terms of the income rewards which women receive relative to those of men. This issue is taken up in Tables 6, 7, and 8. Tables 6 and 7 report the

median salaries of full time employed males and females by occupational group, in terms of dollars standardized to the 1970 consumer price index (U.S. Bureau of the Census, 1974, p. 411). Table 8 reports on the changing ratios of female salaries to male salaries by occupational groups.

As may be observed in Table 6, median salaries of full time employed males of each occupational category, increased over the period 1955 to 1969. For the most part, these increases occurred as basically linear trends. The farmers and farm managers category suggests a slightly curvilinear pattern, indicating increasing rates of change during the later years of observation. For males the most rapid absolute increases occurred among the managerial, professional, sales, and clerical categories. Smaller increases are noted for craftsmen, operatives, and service categories. The lowest increases are observed among the farm laborers, laborers, and farmers and farm managers categories.

As indicated in Table 7, female salaries increased among all the reported occupational categories. Although the trends are generally linear, most of the Pearsonian  $r$  correlations are reduced in comparison with the data for males. Rather than reflecting curvilinear relationships, these reduced coefficients result from inconsistencies in year to year changes. Thus female managerial workers median salary fluctuated irregularly from 1955 to 1963, but began a steady linear increase following that period. Median salaries of female sales workers also fluctuated somewhat until 1963, but entered a period of steady increases from 1964 to 1969. Missing data and

TABLE 6. LONGITUDINAL TRENDS IN MEDIAN SALARIES OF MALE FULL TIME FULL YEAR EMPLOYED WORKERS BY OCCUPATIONAL CATEGORY

Median Salaries Full Time Full Year Male Employed Workers, By Category	Pearsonian r 1955-1969	Slope 1955-1969	Number of Years for Which Data Were Available
Professionals	.99	267.53	15
Managers	.98	272.66	15
Clerical	.99	163.58	15
Sales	.98	198.13	15
Craftspeople	.99	154.62	14
Operatives	.99	136.31	15
Laborers	.94	106.12	14
Private Household Workers	N.A.	N.A.	N.A.
Service Workers	.96	125.57	15
Farmers and Farm Managers	.85	58.05	14
Farm Laborers and Farm Forepersons	.88	104.43	13

TABLE 7. LONGITUDINAL TRENDS IN MEDIAN SALARIES FEMALE FULL TIME FULL YEAR EMPLOYED FEMALE WORKERS BY OCCUPATIONAL CATEGORY.

Median Salaries Full Time Full Year Female Employed Workers, By Category	Pearsonian r 1955-1969	Slope 1955-1969	Number of Years for Which Data Were Available
Professionals	.99	188.43	15
Managers	.89	99.54	14
Clerical	.99	74.67	15
Sales	.94	72.86	14
Craftspeople	.43	41.65	4
Operatives	.94	60.49	15
Laborers	N.A.	N.A.	N.A.
Private Household Workers	.53	15.80	13
Service Workers	.94	81.48	15
Farmers and Farm Managers	N.A.	N.A.	N.A.
Farm Laborers and Farm Forepersons	N.A.	N.A.	N.A.

inconsistent gains and losses combined to reduce the Pearsonian  $r$  correlation as well as the slope of the regression line for the crafts-person category. The operative category showed a clear overall pattern of increases, despite mixed fluctuations until 1966, as did the service workers category. The private household workers category had a somewhat irregular pattern with increases occurring from 1956 to 1958, followed by declines until 1961. From 1964 to 1968 sharp increases occurred, despite a small decline from 1966 to 1967.

The most striking observation to be made from a comparison of Tables 6 and 7 is in the difference in the amounts of increases. In all cases, even among the clerical and service categories where women maintained numerical dominance, the rates by which female median salaries increased are well below those of male workers. In summary, over the period 1955 to 1969 median salaries of full time employed workers in all categories increased, although male salaries indicated greater increases, and more consistent trends than did those of females.

Table 8 suggests the declining economic status of women relative to men. Although there are frequent year to year fluctuations in the directions of changes, with no apparent curvilinear relationships suggestive of an alternative explanation for the low reported Pearsonian  $r$  coefficients, the overall patterns of changes indicate declines in the ratios of female median salaries to those of males. One must be cautious in interpreting these comparative data, as, ideally, any comparison of male and female salaries should control for length and continuity of employment. Data required to introduce

TABLE 8. LONGITUDINAL TRENDS IN FULL TIME FULL YEAR EMPLOYED WOMEN'S SALARIES AS PERCENTAGE OF FULL TIME FULL YEAR EMPLOYED MALES' SALARIES

Median Salaries Full Time Full Year Employed Female Workers as Percentage of Median Salaries of Full Time Full Year Employed Male Workers	Pearsonian r 1955-1969	Slope 1955-1969	Number of Years for Which Data Were Available
Professionals	.52	.16	15
Managers	-.78	-.57	14
Clerical	-.93	-.53	15
Sales	-.48	-.19	14
Craftspeople	-.45	-.47	4
Operatives	-.66	-.31	15
Laborers	N.A.	N.A.	N.A.
Private Household Workers	N.A.	N.A.	N.A.
Service Workers	.35	.21	15
Farmers and Farm Managers	N.A.	N.A.	N.A.
Farm Laborers and Farm Forepersons	N.A.	N.A.	N.A.
Standardized Sexual Income Differential	-.84	-.185	9
Full Time Full Year Female Median Salary	.98	85.413	16
Full Time Full Year Male Median Salary	.998	183.023	16
Ratio: Female Median Salary to Male Median Salary	-.827	-.354	16

these controls are not available and the present study was limited to consideration of salaries of full time employed workers as at least a partial control for these factors.

Nor can the information in Tables 6 through 8 be used as evidence that women do not receive equal pay for equal work, although this may be the case and the small size of the ratios make this an intuitively appealing conclusion. In order to draw such conclusions, consideration would have to be paid to a more detailed breakdown of occupational titles than that provided by the major occupational categories reported in this study. Given the nature of the major census occupational categories, to some extent the discrepancies between male and female salaries might be explained by occupational sexual segregation within major census categories. To the extent to which this is the case, and previous research indicates that such within group variation may be extensive (Gross, 1968), major occupational category salary differentials may reflect the occupational segregation of females within occupational categories rather than violations of an ideal of equal pay for equal work. In either case the evidence does support the conclusion that, for whatever reasons, the economic status of women workers, relative to male workers, declined from 1955 to 1969.

As summary measures indicative of these changes, overall ratios of male to female salaries by occupational groups were calculated standardizing for the percentage distributions of workers by sex. In this way the standardized measure controls the effects of between occupational group variations of occupational sexual segregation, although as with the SMD index, within group variations could not be considered.

The index representative of the ratio of female to male salaries, combining all occupational categories for which sufficient data were available, is also reported in Table 8. This index, the index of Sexual Income Differentiation, was constructed by multiplying the percentage females of all workers in a given occupational group, by the median salaries by sex for that occupational group. Where data were missing with regard to salaries of either sex, or with regard to the proportion of the occupational category which was female, that occupational group was eliminated from the calculations. By summing the products for the standardized salaries of each group, by sex, and by dividing the sum of the females standardized salaries by the sum of the males standardized salaries, the Sexual Income Differentiation index, hereafter termed "SID," was determined. Introducing the standardization technique reduced the number of years of observation to nine with a range from 1958 to 1969. With this reduction in observations in mind, it may be noted that the SID index declined from 1958 to 1965. However, the pattern of declines in the economic status of women relative to men may have begun to reverse itself after 1965, as increases are observed for the period 1965 to 1969.

Such a small number of years of observation does not adequately allow comparison with trends in labor force participation rates or trends in fertility rates. However, the SID index will be utilized in the cross-sectional portion of the study. Comparison of longitudinal trends will be carried out through consideration of the median salaries of males and females, standardized to the 1970 consumer price index, but not standardized to a common sexual

distribution among occupations. Longitudinal trends in these standardized median salaries and their ratios are also reported in Table 8. It should be noted that both female and male, full time, full year, employed workers' median salaries exhibited highly linear patterns of salary increases over the period 1955 to 1970. However, the average amount of increase for male salaries is more than twice the average amount of increase for female median salaries. Therefore, over the period, the ratio of female to male salaries tended to decline in a somewhat linear manner.

In summary, the period 1955 to 1969 was a period of rising salaries for all workers, male and female. Males' salaries tended to increase more rapidly than did female salaries among all occupational groups. Among males, the occupational categories with the largest average annual increases in median salaries were the managerial, professional, sales, and clerical categories. For females, the greatest absolute increases occurred among the professional, managerial, service, and clerical categories, respectively. Overall, the ratio of female median salaries to male median salaries declined among all categories, with the exception of the professional and service categories. Summary measures indicate the declining economic status of women, although there are indications that the trend may have begun a reversal between 1965 and 1969.

#### Longitudinal Trends in Fertility Rates

Having considered the changing age patterns and structural conditions of female employment, attention is now shifted to Table 9

TABLE 9. LONGITUDINAL TRENDS IN AGE SPECIFIC FERTILITY RATES AND TOTAL FERTILITY RATE

Age Specific Fertility Rates	Pearsonian r 1930-1970	Slope 1930-1970	Number of Years for Which Data Were Available	Pearsonian r 1947-1970	Slope 1947-1970	Number of Years for Which Data Were Available
Age Group 10-14	.82	.018	41	.19	.003	24
Age Group 15-19	.71	1.17	41	-.40	-.57	24
Age Group 20-24	.71	3.08	41	-.23	-.99	24
Age Group 25-29	.68	1.88	41	-.91	-.33	24
Age Group 30-34	.37	.52	41	-.66	-1.32	24
Age Group 35-39	-.07	-.05	41	-.77	-.90	25
Age Group 40-44	-.73	-.16	41	-.81	-.28	25
Age Group 45-49	-.95	-.035	41	-.95	-.034	25
TOTAL FERTILITY RATE	.62	32.098	41	-.44	-24.95	25

and a description of trends in age specific fertility in the United States from 1930 to 1970. In addition to indicating a period measure of fertility, that is, the number of live births per 1000 women in the designated age group, these fertility rates also indicate the proportion of women in the designated age group who gave birth to a live infant during the year under consideration (assuming that the frequency of multiple births is sufficiently small to be reduced to the realm of measurement error). Such fertility rates may serve as an empirical indicator of the probability of a woman, from a given age group, giving birth to a live child during the period under consideration.

The Total Fertility Rate represents a period measure of the level of fertility in a society. It is particularly useful in a study of variations in fertility as the total fertility rate is an index of fertility which is standardized to an age distribution of 1000 women in each age level. The Total Fertility Rate is calculated by summation of the ages specific fertility rates, and multiplication by five. The Total Fertility Rate declined slightly from 1930 to 1937, but began a steady pattern of increase thereafter, and reached a peak in 1957. Following 1957, a period of declines in the Total Fertility Rate obtained through 1970. Given the curvilinear nature of the relationship, the reported slopes of the regression line, and the corresponding Pearsonian  $r$  coefficient, do not suffice as indicators of the pattern. Consideration of age specific rates of fertility over time allows one to evaluate the extent to which variations in the Total Fertility Rate may have been differentially affected by the respective

age groups. Eight five-year age categories, beginning with age group 10-14, and ending with age group 45 to 49, have been considered. The actual data are provided in the Appendix, and the Pearsonian  $r$  coefficients and the slopes of the regression line, over time are reported in Table 9. Age groups 15 to 19 to 35 to 39 tend to follow a similar pattern as the Total Fertility Rate.

While the youngest age category 10-14 at no point accounted for more than 1.2 births per 1000 women, this age category tended to vary in its fertility rate in a somewhat curvilinear manner which yielded net increases for the entire period. Fertility rates for age group 15 to 19 showed greater variation and a pattern similar to that of the total fertility rate. From 33.6 births per 1000 women in 1933, the rate for this group increased to a peak of 19.3 births per 1000 women in 1957. Declines occurred thereafter and by 1969 the fertility rate for this group stood at 66.1. Age category 20 to 24 followed a similar pattern, increasing to a peak of 260.6 births per 100 women in 1957, then declining after 1960 to a 1969 figure of 166.0. In 1970 the rate for age group 20 to 24 was 167.8

Age category 25 to 29 declined to a 1933 figure of 104.5, but by 1937 had begun a period of increases which culminated in the 1959 figure of 200.5. A period of declines followed from 1959 to 1969 when the fertility rate for age group 25 to 29 was 140.3. A similar pattern, although more irregular, is observed for the fertility rates of age category 30 to 34 which declined from 1930 to 1936, followed a general pattern of increases to 1957. A sharp peak is noted for the years immediately following World War II, but the decline in 1948 reestablished

the earlier pattern. In 1957 a peak of 118.9 births per 1000 women age 30 to 34 was reached, but a period of decline carried through to 1970 when the fertility rate of this group approximated the 1930 level.

The fertility rate for age group 35 to 39 declined from 1930 to 1939, when the fertility rate was 40.0, but began a period of net increases until 1947 when a rate of 58.9 obtained. By 1950 the rate had dropped to 52.9, but a period of slower increases began until 1957 when a peak figure of 59.9 was reached. Following 1957 the fertility rate declined until 1970 when the rate, 31.7, was below the 1939 figure.

Age groups 40 to 44 and 45 to 49 follow a more consistent pattern of declines. Age group 40 to 44 declined from 1930 to 1937, followed by a small net increase in a period of irregular changes from 1939 to 1947 and small net decline from 1947 to 1957. From 1957 to 1970 this group exhibited a pattern of steady declines, and by 1965 the fertility rate had fallen below the low attained by 1939. For age group 45 to 49, the most elderly considered, the period 1930 to 1970 was one of steady declines. The exceptions to this trend are only increases from a figure of 1.3 in 1939 to 1.9 in 1940. Declines over the war years, with only a slight increase in rates in the post war years, reestablished the earlier pattern. By 1948 the previous 1939 low of 1.3 had been matched. In 1970 the fertility rate for age group 45 to 49 was 0.5 births per 1000 women.

In summary it is suggested that the general fertility pattern was one of declines from 1930 to approximately the mid-thirties. Younger age groups tended to increase fertility from approximately 1940 to the late 1950's. Following 1959 all groups tended toward declines,

with the most pronounced reductions occurring among the over thirty age groups. Age groups 40 to 44 and 45 to 49 exhibited the most consistent patterns of declines. Despite such similarities, it is clear that slightly different longitudinal patterns characterize the various age groups, and thus consideration should be paid to the possible differential effects of conditions of female employment on fertility patterns by age group.

## CHAPTER 5

### OPERATIONALIZATION, AND DEMONSTRATION OF HYPOTHESES UTILIZING LONGITUDINAL DATA

In Chapter 1, a model of proposed relationships of structural conditions of female employment and family situation factors to probabilities of female labor force participation and fertility was presented. Chapter 4 traced longitudinal trends in structural conditions of female employment, rates of female participation in the labor force, and rates of fertility, for the case of the United States from 1930 through 1970. In that context several of the concepts of the model were operationalized.

These operational definitions will be reviewed in the present chapter and the remaining concepts which refer to structural conditions of female employment will be operationally defined. Hypotheses, suggested by theoretical propositions 1 through 17, may then be formulated in terms appropriate to longitudinal analyses. These hypotheses will be empirically demonstrated utilizing the data reviewed in Chapter 4. Unfortunately, data are not available which would permit longitudinal consideration of family situation factors suggested by the theoretical model. In the succeeding chapter, further operationalization of both sets of concepts will be carried out such that testable hypotheses, reflective of all propositions, may be formulated in terms appropriate to cross-sectional analyses.

In reference to the present longitudinal analyses, the term "demonstrated" is used in preference to the term "tested," as the existing data regarding structural conditions of female employment are not available at sufficiently consistent intervals to permit adequate evaluation of, and control for, serial-correlation (i.e. auto-correlation). Such control would be necessary in order to determine the actual strengths of the longitudinal relationships, and their levels of statistical significance (Wonnacott and Wonnacott, 1970, pp. 136-145). Nonetheless, exposition of the general patterns of correlations in the relevant longitudinal trends is believed to be an important contribution to the study of the relationship of female participation in the labor force and fertility, and therefore, is the goal of this chapter.

#### Operational Definitions

In the preceding chapter the Standard Measure of Differentiation was introduced, and applied to distributions of males and females among the major occupational categories, as an empirical indicator of the extent of differentials in sexual distributions among occupational roles. Trends in male and female salaries were also reviewed, and a standardized measure of employed female and male income equality was presented. The sexual income differentiation index, or SID, was taken as the ratio of full time, full year employed female median salaries to those of full time, full year, employed male workers. Salaries were standardized to the female distributions among occupational categories in order that salary

differentials would be reflective of income differences, rather than differences in the distributions of male and female workers among occupational roles. Although within-category differentials in distributions would continue to distort the measure, available data did not permit further correction.

The index of sexual income differentiation, SID, was used in the cross-sectional analyses as the indicator of sexual income equality. However, in the case of the longitudinal analyses, data were such that the SID index could only be computed for nine years of observation. Therefore, this index could not be used in the present demonstration of longitudinal hypotheses. As an alternative, it has been suggested that median salaries of full time, full year, employed females and males, standardized to the 1970 consumer price index, but uncorrected for differentials in distributions of male and female workers, could be utilized. Such data were available at consistent annual intervals for the period 1955 to 1970. The ratio of male to female median salaries, the median income ratio, hereafter termed MIR, was thus utilized as a proxy for SID in the longitudinal study.

In addition to consideration of the rewards associated with female employment as relevant to those associated with male employment, the proposed model also includes consideration of the absolute level of the income of employed women. The median female salary, the numerator of the MIR calculations, may be taken as an indicator of this term.

The indices of the probabilities of labor force participation and childbearing, female labor force participation rates and

fertility rates, have been adequately defined in the preceding chapter. Two terms, relating to the structural conditions of female employment, remain to be operationalized. The rate of increase in rewards associated with female employment" may be defined as the percentage increase or decrease in women's salaries at some time  $t$ , over some time interval preceding  $t$ . In the present case the interval is taken to be one year. The percentage change in the income of employed women, hereafter referred to as the standard income of change, or SIC, may be calculated by subtraction of the consumer price index standardized median income of employed women at a given point in time (year of observation  $t-1$ ), from the standardized median income of females at the succeeding point in time (year of observation  $t$ ). This difference is then divided by the median income of employed women for the previous point in time (year of observation  $t-1$ ). The quotient is then multiplied by 100 to obtain the SIC value.

The concept of "prevalence of female sex typed, secondary careers," may be operationalized by consideration of the percentage of the total employed labor force engaged in clerical, sales, service, and farming occupational categories. This index, to be referred to as PSC, is admittedly crude, but is intended to serve as an indicator of the extent to which there are occupational roles present in the social system, which require little prior, or continuing, training, entail low levels of responsibility, easy task transference to new employees, and permit easy mobility into, and out of, the labor force. Here the concept of secondary career is used in a manner similar to Turner's application of the term (1964), rather than that adopted

by Bancroft (1959, pp. 118-119). Bancroft referred to secondary workers as essentially part time or part year workers. A degree of empirical overlapping regarding the two uses of the term may be expected.

This completes operationalization of the major concepts of the theoretical model. As all indices are percentages, ratios, or interval level measures, hypotheses regarding relationships among these may be demonstrated utilizing the Pearsonian  $r$  coefficient of correlation. However, it should be remembered that the available data did not permit corrections for serial correlation. Therefore, the Pearsonian  $r$  coefficients should not be taken as definitive, and may be expected to underestimate the strength of the relationship, to the extent to which the data are characterized by serial correlation (Wonnacott and Wonnacott, 1970, pp. 137-138).

As several of the proposed relationships in the theoretical model suggested as varying with the age of the population considered, correlations, of structural indices with rates of labor force participation and fertility, are reported by age levels. Third order hypotheses, which in the present case consider variations in strengths and directions of relationships, among populations of different age levels, will be demonstrated through the use of the Spearman's Rho rank order correlation coefficient. This convention for demonstrating third order relationships has been utilized by Havens and Gibbs (1975). Spearman's Rho was chosen as it does not require interval assumptions regarding changes in magnitude of the first order correlations by age group.

### Formulation of Longitudinal Hypotheses

Having operationalized all relevant concepts of the proposed theoretical model, and having specified the techniques by which strengths of relationships will be evaluated, longitudinal hypotheses may now be formulated which will be reflective of theoretical propositions 1 through 17, which were presented in Chapter 1. Each of the research hypotheses to be offered has been numbered in accordance with the number of the theoretical proposition to which it corresponds. In addition, the hypotheses have been organized into four groups. First, the hypothesis regarding the assumed inverse relationship of female participation in the labor force and fertility will be offered. Second, hypotheses involving interrelationships among the indicators of the structural conditions of female employment will be presented. The third group of hypotheses refer to the relationships of the indicators of the structural conditions of female employment to female labor force participation rates, by age. Finally, hypotheses will be presented regarding the relationships of structural indicators to fertility rates by age levels. This form of organization will facilitate efficient presentations of the statistical findings. However, as these groupings of hypotheses do not correspond to the order of presentation of the theoretical propositions, the numerical order of the hypotheses to be presented will be disrupted.

Longitudinal Hypothesis 1. Within a given society, over time, negative relationships are exhibited between female labor force participation rates and fertility rates, by age groups.

Longitudinal Hypothesis 12. Within a given society, over time, a neagive relationship is exhibited between the index of the prevalence of female sex typed secondary careers, PSC, and the median income of employed women.

Longitudinal Hypothesis 13. Within a given society, over time, a negative relationship is exhibited between the index of the prevalence of female sex typed secondary careers, PSC, and the median income ratio, MIR.

Longitudinal Hypothesis 14. Within a given society, over time, a positive relationship is exhibited between the Standard Measure of Differentiation, SMD, and the prevalence of female sex typed secondary careers, PSC.

Longitudinal Hypothesis 17. Within a given society, over time, a positive relationship is exhibited between the standard income change index, SIC, and the median income of employed women.

Longitudinal Hypothesis 2. Within a given society, over time, negative relationships are exhibited between the Standard Measure of Differentiation, SMD, and female labor force participation rates by age groups.

Longitudinal Hypothesis 4. Within a given society, over time, positive relationships are exhibited between median income of employed women and female labor force participation rates by age groups.

Longitudinal Hypothesis 6. Within a given society, over time, positive relationships are exhibited between the standard income change index, SIC, and female labor force participation rates by age groups.

Longitudinal Hypothesis 8. Within a given society, over time, positive relationships are exhibited between the median income ratio, MIR, and female labor force participation rates by age groups.

Longitudinal Hypothesis 10. Within a given society, over time, positive relationships are exhibited between the prevalence of female sex typed secondary careers, PSC, and female labor force participation rates by age groups.

Longitudinal Hypothesis 15. Within a given society, over time, a positive relationship is exhibited between the correlation coefficients of the PSC index and the respective age specific female labor force participation rates and the age levels to which the female labor force participation rates apply.

Longitudinal Hypothesis 16. Within a given society, over time, a positive relationship is exhibited between the correlation coefficients of the SMD index (inequality of occupational distribution) and the respective age specific female labor force participation rates and the age levels to which the female labor force participation rates apply.

Longitudinal Hypothesis 3. Within a given society, over time, positive relationships are exhibited between the Standard Measure of Differentiation, SMD, and fertility rates by age groups.

Longitudinal Hypothesis 5. Within a given society, over time, negative relationships are exhibited between the median income of employed women, and fertility rates by age groups.

Longitudinal Hypothesis 7. Within a given society, over time, negative relationships are exhibited between the standard income change index, SIC, and fertility rates by age groups.

Longitudinal Hypothesis 9. Within a given society, over time, negative relationships are exhibited between the median income ratio, MIR, and fertility rates by age groups.

Longitudinal Hypothesis 11. Within a given society, over time, positive relationships are exhibited between the prevalence of female sex typed secondary careers, PSC, and fertility rates by age groups.

#### Demonstration and Interpretation of Longitudinal Relationships

The first longitudinal hypothesis for consideration concerns the relationships of aggregate age specific rates of female participation in the labor force to aggregate age specific rates of fertility. The results of statistical analyses, utilizing the Pearsonian  $r$  coefficient of correlation, are reported in Table 10. Longitudinal data regarding age specific fertility rates were available for five year age categories. Unfortunately, the size of the age categories for which labor force participation rates were available, varied. In order to create more comparable age groups, where necessary, rates for adjacent age groups were weighted, through multiplication by the number of years in the respective age groups, and summed as appropriate to create consistency between the sets of indices.

The obtained relationships were unexpected, as theoretical development had operated under the assumption of negative relationships between rates of female participation in the labor force, and rates of fertility. When Total Fertility Rates and labor force participation rates of all women were considered, only negligible

TABLE 10. CORRELATIONS OF RATES OF FEMALE LABOR FORCE PARTICIPATION WITH FERTILITY, BY AGE CATEGORIES: UNITED STATES, 1930 THROUGH 1970.

Age Specific Fertility Rates and Summations	Age Specific Labor Force Participation Rates and Summations							Labor Force Participation Rate, All Women	
	Age 14-17	Age 18-19	Sum Age Below 20	Age 20-24	Age 25-34	Age 35-44	Age 45-54		Sum Age 15-44
Age 15-19	r .4061 n 26	Age 18-19 -.2703 26	Sum Age Below 20 .4657 27	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Age 20-24	r			Age 20-24 -.4598 27	Age 25-34	Age 35-44	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Age 25-29	r				Age 25-34 -.5937 26	Age 35-44	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Age 30-34	r				Age 30-34 -.8193 26	Age 35-44	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Sum Age 25-34	r				Sum Age 25-34 -.7019 26	Age 35-44	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Age 35-39	r					Age 35-44 -.5591 26	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Age 40-44	r					Age 40-44 -.7349 26	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women
Sum Age 35-44	r					Sum Age 35-44 -.6028 26	Age 45-54	Sum Age 15-44	Labor Force Participation Rate, All Women



correlation coefficients were observed. Similar findings resulted when the summed rates for ages 15 to 44 were considered. However, all more precise groupings exhibited the expected negative relationships. The one exception was the correlation obtained for comparison of female labor force participation rate of the youngest age group, age below 18, with the fertility rate of age group 15 to 19. The decreased relationships which obtained when broad age ranges were considered may be due to the operation of time lags with regard the effects of structural conditions by age groups. Despite the low coefficients, in general it may be suggested that age specific rates of fertility and labor force participation have tended to follow inverse trends over time.

Hypotheses 12, 13, 14, and 17 may be evaluated in light of the correlation matrix reported in Table 11. Hypothesis 12 receives support, although statistical significance cannot be ascertained for reasons discussed previously in this chapter. The Pearsonian  $r$  correlation coefficient was  $-.91$ , suggesting a rather substantial inverse relationship between the prevalence of female sex typed secondary careers and the median income of employed females.

Although hypothesis 13 predicted a negative relationship between the prevalence of female sex typed secondary careers, and the median income ratio, a strong positive relationship was obtained. This unexpected finding suggests that the greater the proportion of the labor force which is engaged in clerical, sales, service, and farming occupations, the more salaries of full time employed women will approximate those of full time employed men. However, it should

TABLE 11. INTERCORRELATIONS OF LONGITUDINAL TRENDS OF STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT IN THE UNITED STATES

	Prevalence of Female Sex Typed Secondary Careers <sup>a</sup>		Median Income Employed Women <sup>b,c</sup>	Standard Income Change <sup>b</sup>	Median Income Ratio <sup>b</sup>
Standard Measure of Differentiation <sup>a</sup>	r	0.5993 (17)	0.5524 (10)	0.2025 (10)	-0.2717 (10)
Prevalence of Female Sex Typed Secondary Careers	r		-0.9139 (10)	-0.4671 (10)	0.7668 (10)
Median Income Employed Women <sup>b,c</sup>	r			0.3615 (15)	-0.7087 (16)
Standard Income Change <sup>b</sup>	r				0.1013 (15)
	N				

<sup>a</sup>Data available for 1930 through 1970.

<sup>b</sup>Data available for 1955 through 1970.

<sup>c</sup>Full time full year employment.

r = Pearsonian r correlation coefficient, no corrections for serial correlation.

N = Number of observation years.

be remembered that the number of years of observation remains small and present findings remain inconclusive. Hypothesis 14 also received support. Consistent with expectations, as the total proportion of the labor force engaged in clerical, sales, service, and farming categories increased, the degree of occupational sexual differentiation also increased.

The predicted positive coefficient also obtained for the relationship between the standard income change index, and the median income of employed women ( $r=.362$ ). The reduced magnitude of the correlation coefficient, however, may be due to a curvilinear relationship. Over a period of steady, annual, absolute increases in median incomes of employed women, the standard income change, the percentage increase over the level of the previous year, would be expected to decline at an increasingly rapid rate. Thus a statistical difficulty, inherent in the empirical indicator, may at least partially explain the reduced Pearsonian coefficient.

In addition to these predicted relationships, other inter-correlations of the longitudinal, structural indices are worthy of mention. Median income ratio is observed to be substantially, inversely, related to the median income of employed women. This correlation may reflect the steady increases in salaries of both sexes, between 1955 and 1970, as well as the more rapid rates of increase in salaries of male workers. The positive correlation of the Standard Measure of Differentiation and the median income of employed women ( $r=.55$ ) is also noteworthy. Although one must be cautious in interpretation, given the small number of observations,

it would appear that over the period 1955 to 1970, as occupational sexual differentiation increased, female salaries also tended to increase. However, the relationship is likely to be spurious. Both variables are somewhat strongly related to the PSC index, which may be as reflective of the expansion of bureaucracy, and technology, as of secondary careers.

Turning attention to relationship of the indices of the structural conditions of female employment to rates of female labor force participation, by age groups, Table 12 indicates that hypothesis 2 tended to be supported among the younger age groups. Among these age groups, as predicted, the obtained Pearsonian  $r$  coefficients, of the relationships of the Standard Measure of Differentiation to age specific rates of female labor force participation, were negative. However, for the youngest age group, and for age group 20 to 24, the negative coefficients are quite small. Consistent with hypothesis 16, the relationship moves in a positive direction with increasing age levels. Therefore, among age groups 25 years of age and over, the obtained coefficients were found to be positive. When broad age ranges were considered, the relationship became distorted, and the coefficients were greatly reduced.

Hypothesis 10, which predicted positive relationships between the prevalence of female sex typed secondary careers and female labor force participation rates, was supported only among the older age groups. However, consistent with hypothesis 15, the magnitudes of the correlation coefficients declined, and became negative, among the younger age levels. In contradiction to the

TABLE 12. PEARSONIAN  $r$  ZERO ORDER COEFFICIENTS OF STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT WITH FEMALE LABOR FORCE PARTICIPATION RATES IN THE UNITED STATES, BY AGE GROUPS.

Age Specific Rates of Female Labor Force Participation and Summations	Structural Conditions of Female Employment				
	Standard Measure of Differentiation <sup>a,b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>a,b</sup>	Median Income of Employed Women <sup>a,c,d</sup>	Standard Income Change <sup>a,c</sup>	Median Income Ratio <sup>a,c</sup>
Below 18 (14-17)	r n	-0.1118 (16)	0.5211 (16)	0.3844 (15)	-0.0155 (16)
Age 18-19	r n	-0.1515 (16)	0.5422 (16)	0.2756 (15)	-0.1617 (16)
Sum Age <sup>e</sup> Below 20	r n	-0.4749 (17)	0.5387 (16)	0.3694 (15)	-0.485 (16)
Age 20-24	r n	-0.0026 (18)	0.9587 (16)	0.3598 (15)	-0.5947 (16)
Age 25-34	r n	0.4001 (17)	0.9630 (16)	0.3359 (16)	-0.6257 (16)
Age 35-44	r n	0.3299 (17)	0.9797 (16)	0.3328 (15)	-0.6540 (16)
Age 45-54	r	0.4437 (17)	0.9345 (16)	0.2069 (15)	-0.8322 (16)
Sum Age <sup>e</sup> 15-44	r n	-0.1768 (18)	0.9496 (16)	0.3588 (15)	-0.5759 (16)

TABLE 12. - CONTINUED

Age Specific Rate of Female Labor Force Participation and Summations	Structural Conditions of Female Employment				
	Standard Measure of Differentiation <sup>a,b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>a,b</sup>	Median Income of Employed Women <sup>a,c,d</sup>	Standard Income Change <sup>a,c</sup>	Median Income Ratio <sup>a,c</sup>
All Ages <sup>e</sup>					
Female LFPR	r n	-0.3404 (17)	0.9860 (16)	0.3222 (15)	-0.6926 (16)
Spearman's Rho of Pear- sonian r ranks with age groups	r	.7714	.6571	-.6571	-1.000

<sup>a</sup>Structural indicator calculated without age controls

<sup>b</sup>Data available for 1930 through 1970.

<sup>c</sup>Data available for period 1955 through 1970.

<sup>d</sup>Full time full year employment

<sup>e</sup>Not included in Spearman's Rho computations.

r = Pearsonian r correlation coefficient; no corrections for serial correlation

n = Number of observation years

predicted relationships, when all age levels were simultaneously considered, the obtained coefficients indicated negative relationships. Hypothesis 4, which suggested positive relationships of median income of employed women to female labor force participation rates, was supported with correlation coefficients ranging from .52 to .98.

The suggested positive relationships of SIC, standard income change and female labor force participation rates, by age groups (hypothesis 6), was also upheld. Furthermore, there is little change in the magnitude of the correlation coefficients when age specific labor force participation rates are considered.

The refutation of hypothesis 8 in the present context is both surprising and understandable. The obtained coefficients of the relationships of the median income ratio to female labor force participation rates indicated negative correlations, which were particularly strong among the older age groups. For age groups below age 20, the obtained negative relationships were sharply reduced. These findings suggest that as women's salaries relative to those of men declined, female participation in the labor force tended to increase. Although unexpected, these results may have occurred due to the confounding, longitudinal influence of increases in median incomes of employed women, which may have offset the effects of the more rapid rates of increase of salaries of employed males.

Table 13 reports the coefficients of the relationships of the structural conditions of female employment to fertility rates, by age groups. The relationships of the Standard Measure of Differentiation, SMD, to rates of fertility, predicted by hypothesis 3, did

TABLE 13. PEARSONIAN  $r$  ZERO ORDER COEFFICIENTS OF STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT WITH FERTILITY RATES IN THE UNITED STATES, BY AGE GROUPS.

Age Specific Fertility Rates and Summations	Structural Conditions of Female Employment					
	Standard Measure of Differentiation <sup>a,b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>a,b</sup>	Median Income of Employed Women <sup>a,c,d</sup>	Standard Income Change <sup>a,c</sup>	Median Income Ratio <sup>a,c</sup>	
Age 15-19	$r$	-0.2909 (18)	-0.3702 (17)	-0.9135 (16)	-0.2769 (15)	0.8979 (16)
	$n$					
Age 20-24	$r$	-0.1748 (18)	-0.2034 (17)	-0.9152 (16)	-0.3303 (15)	0.6638 (16)
	$n$					
Age 25-29	$r$	-0.2310 (18)	-0.2094 (17)	-0.8921 (16)	-0.3106 (15)	0.6613 (16)
	$n$					
Age 30-34	$r$	-0.3862 (18)	-0.0643 (17)	-0.9504 (16)	-0.3234 (15)	0.6994 (16)
	$n$					
Sum Age <sup>e</sup> 25-34	$r$	-0.3011 (18)	-0.1585 (17)	-0.9204 (16)	-0.3171 (15)	0.6802 (15)
	$n$					
Age 35-39	$r$	-0.3426 (18)	0.1516 (17)	-0.9719 (16)	-0.3266 (15)	0.7036 (16)
	$n$					
Age 40-44	$r$	-0.0698 (18)	0.4027 (17)	-0.9712 (16)	-0.3401 (15)	0.6581 (16)
	$n$					
Sum Age <sup>e</sup> 35-44	$r$	-0.2771 (18)	0.2229 (17)	-0.9724 (16)	-0.3299 (15)	0.6940 (16)
	$n$					

TABLE 13 - CONTINUED

Age Specific Fertility Rates and Summations	Standard Measure of Differentiation <sup>a,b</sup>	Structural Conditions of Female Employment				
		Prevalence of Female Sex Typed Secondary Careers <sup>a,b</sup>	Median Income of Employed Women <sup>a,c,d</sup>	Standard Income Change <sup>a,c</sup>	Median Income Ratio <sup>a,c</sup>	
Age <sup>e</sup>						
45-49	r	-0.2016 (18)	0.3718 (17)	-0.9424 (16)	-0.2781 (15)	0.6556 (16)
	n					
Sum Agee	r	-0.2664 (18)	-0.1680 (17)	-0.9332 (16)	-0.3222 (15)	0.6968 (16)
15-44						
Sum Agee	r	-0.2667 (18)	-0.1664 (17)	-0.9332 (16)	-0.3221 (15)	0.6968 (16)
15-49						
Total						
Fertility	r	-0.2676 (18)	-0.1675 (17)	-0.9332 (16)	-0.3221 (15)	0.6968 (16)
Rate	n					
Spearman's Rho of						
Pearsonian r ranks with age groups	r	.4286	.9286	-.6429	-.2500	-.6786

<sup>a</sup>Structural indicator calculated without age controls.

<sup>b</sup>Data available for 1930 through 1970.

<sup>c</sup>Data available for period 1955 through 1970.

<sup>d</sup>Full time full year employment

<sup>e</sup>Not included in Spearman's Rho computations.

r = Pearsonian r correlation coefficient; no corrections for serial correlation

n = Number of observation years

not obtain and only negative Pearsonian  $r$  correlation coefficients were observed. These coefficients, exhibiting no clear patterns of variations by age groups, suggest that as occupational sexual differentiation increased, fertility tended to decline. It will be recalled that increases in differentials in distributions of males and females among occupational roles were expected to be associated with increased probabilities of childbearing, as increases in such differentials were suggested as reflective of declines in the range of available occupational roles. These negative relationships suggest the need for further longitudinal research to consider more explicitly the effect of the nature of available occupational roles, in addition to the question of comparability of distributions of workers by sex.

Hypothesis 11, which considered the relationships of the prevalence of female sex typed secondary careers to fertility rates, was supported only among the older age groups, where small positive correlation coefficients were observed. Among the younger age groups, the relationships were of similar strengths, but were negative in sign. These findings indicate that the presence of secondary career occupational roles, in a social system, may have a slightly deterrent effect on early childbearing.

Median income of employed women was found to be highly negatively related to fertility rates, as predicted by hypothesis 5. Although the strengths of the relationships were reduced, as compared with the coefficients involving median income of employed women, Standard income change, SIC, was found to be negatively related to fertility rates among all age groups. This is consistent with

hypothesis 7. These findings suggest that the level of income received by employed women may also serve as a deterrent to increased rates of childbearing, particularly under conditions in which the level of income received represents a relative improvement over preceding years.

Finally, it must again be noted that the observed directions of the relationships involving the median income ratio were in contrast to those predicted. Although hypothesis 9 suggested negative relationships of MIR to fertility, by age groups, rather substantial positive relationships were observed. As in the case of hypothesis 8, the relationships may be confounded due to the effects of simultaneous increases in both male and female median salaries, and the more rapid rate of increase in median salaries of employed males.

#### Conclusions Regarding Longitudinal Analyses

Conclusions based on the preceding longitudinal analyses should only be drawn with great caution. As the present study did not correct for serial correlation of the longitudinal data, it is possible that the observed Pearsonian  $r$  correlation coefficients underestimate the strength of the true longitudinal relationships. However, one should not assume that the degree of underestimation is large, and thus overestimate the importance of a relationship.

Variables indicative of distributions of the labor force among available occupational roles in the social system, over time, appear to be less influential on variations in rates of fertility and female labor force participation than were variables indicative of the economic status of women. Although the longitudinal evidence suggests

that both sets of factors may serve as deterrents to childbearing, particularly among the younger age levels, the economic status of women appears to have the greatest potential as a structural deterrent to fertility among all age levels. However, in contrast, the median income ratio, as indicative of the economic status of women relative to men, was found to be positively related to fertility rates, suggesting the paradoxical conclusion that sexual economic equality may encourage fertility. This surprising statistical finding becomes comprehensible, and more accurately interpretable, when it is recalled that, while over the period of observation, in this case 1955 to 1970, both males and females salaries increased, the average annual amount of increase in median salaries of males was considerably greater than that for females. Thus the positive correlations of the median income ratio with rates of fertility may reflect the effects of increased incomes of males rather than sexual economic equality. In order to further clarify the respective influences of female income levels, male income levels, and the ratio of these, these factors will be considered further in the cross-sectional study. In addition to considerations of the relationships in that research context, it is also recommended that further longitudinal research be carried out in order that more accurate and detailed data may be obtained which would permit evaluation of the proposed relationships with statistical controls for serial correlation. Longitudinal partial correlation and multiple correlation analyses should be pursued as well.

Findings have also been observed regarding the influence of the structural conditions of female employment on female labor force

participation rates. Variables indicative of distributions of the labor force among occupational roles were found to be less influential on variations in rates of female participation in the labor force than were variables indicative of the economic status of women. Among women age 18 to 19, over time, the degree of occupational sexual differentiation tended to act as a deterrent to increased rates of labor force participation, although among older women, occupational sexual differentiation tended to be associated with increased rates of female labor force participation. Similar findings were observed regarding the prevalence of female sex typed secondary careers, which was itself associated with the Standard Measure of Differentiation. As both variables are positively related to rates of labor force participation of women over age 35, it may be that the nature of roles available to women under conditions of occupational sexual differentiation are in fact such as to minimize conflict between work and wife and mother responsibilities, particularly responsibilities arising from prior childbearing.

As expected, both the median income of employed females, and the standard income change in females' salaries are found to serve as inducements to female labor force participation among all age levels. However, the median income ratio was found to be inversely related to female labor force participation among all but the youngest age levels, suggesting that sexual economic equality might have served as a deterrent to female labor force participation. As in the case of the relationship of that variable to fertility rates, one must consider the effects of the longitudinal increases in salaries of each sex, as

well as the more rapid increases in salaries of males. It would appear, therefore, that the obtained positive relationship may be due to the effects of the rapid increases in males' salaries, rather than to deterrent effects of sexual income equality. This question should also be considered in future longitudinal research, and will be taken up in cross-sectional perspective in Chapters 6 and 7.

Unfortunately, within the present research context and given the limitations of available data, such questions as the above cannot be resolved. Therefore, more accurate and elaborate specification of the hypothesized longitudinal relationships must await acquisition of additional historical data. However, consideration of a cross-sectional perspective may contribute to an increased understanding of the dynamics of the hypothesized relationships. Chapters 6 and 7 report on an empirical, cross-sectional, evaluation of the proposed theoretical model. Although one cannot assume that cross-sectional findings are indicative of those which would obtain if more precise longitudinal analyses were possible, it is hoped that the knowledge gained from each approach may be synthesized to yield a more complete understanding which may benefit formulation of policy recommendations.

## CHAPTER 6

### FERTILITY AND FEMALE PARTICIPATION IN THE LABOR FORCE IN CROSS-SECTIONAL PERSPECTIVE: OPERATIONALIZATION AND HYPOTHESIS FORMULATION

Although data were unavailable which would have allowed more adequate longitudinal consideration of the suggested models of female labor force participation and fertility rates, the 1970 Public Use Sample from the U.S. Census provides adequate cross-sectional data from which most of the suggested relationships may be statistically ascertained and evaluated. The Public Use Sample may be described as a representative, stratified, systematic sample of the basic records from the 1970 census (U.S. Bureau of the Census, 1972). Actually, several such samples exist. The sample, from which the data of the present study were drawn, was provided by the one-in-one-hundred sample derived from the long form census questionnaires administered to 5 percent of the sample units (households, vacant units, or group quarters) of the United States located in Standard Metropolitan Statistical Areas of 250,000 or greater population. As the 5 percent long form questionnaires were completed for 1/20th of the sample units of the universe (in the present case the universe consists of all sample units in all SMSA's with 250,000 or greater population), a stratified sample of one-fifth of these records was systematically selected. This produced a 1 percent sample for each SMSA.

Within each SMSA, the 5 percent long form questionnaires were stratified according to the 75 strata inclusive of all the types of sample units. From each stratum a systematic sample of 1/5 of the 5 percent long form records was selected. This produced the one-in-a-hundred systematic sample for each of the Standard Metropolitan Statistical Areas of the United States with 250,000, or over, population.

From this sample, a further sub-sample was selected which would allow efficient calculation of the various indices required by the present research goals. The 1/100 Public Use Sample contained data on approximately two million persons. In order to produce a sub-sample which would be sufficiently large to calculate the necessary coefficients, while sufficiently small to be realistically within the realm of available computer facilities (the 1/100 data require 33 computer tapes), a subsample was taken by randomly selecting 42 Standard Metropolitan Statistical Areas with populations of 250,000 or over. Within each selected SMSA approximately 1500 family households were randomly selected. This is to say that if the 1/100 sample of a given SMSA contained fewer than 1500 family households, all family households were included in the sub-sample. If the given SMSA had more than 1500 family households, a computerized, fortran, randomization technique was utilized to select a proportion of family households which would approximate 1500 family households. The procedure simulates a multiface die, the number of faces of which is such that the probability of a given face obtaining would be equal to 1500 divided by the number of family records in the 1/100 sample,

for that SMSA. A family household was considered to be a sample unit occupied by at least one family. A family was defined as a collection of two or more persons, living in the same household, and related by blood, marriage, or adoption.

After such households had been appropriately selected, the records contained on the Public Use Sample computer tapes, relating to that household, were then sorted such that the household was divided into the primary family and the respective subfamilies if any were present. A primary family was defined as a family whose head was also the head of the household in which the family resides. A subfamily was defined as a family, living in the same household as a primary family, whose head was related by blood, or adoption, to the head of the primary family.

A computerized logical record was constructed for each family in each selected household. These records contained the complete person records, from the 5 percent long form questionnaires, for the male and the female family heads, if present. In addition, age, sex, occupational, and income data on the ten oldest children in the family, living with their parents, were recorded, as well as the complete household record pertaining to the household in which the family resided. Such information would permit calculation of aggregate statistics for each of the variables implicit in the suggested models of fertility and female participation in the labor force.

The actual sample population for which the aggregate statistics utilized in the present study were calculated was further delineated by the exclusion from consideration of all families except

those of women age 15 to 49 whose husband was present, and which contained ten or fewer children living with their parents. This latter consideration was necessary, due to the nature of the constructed tapes, in order that the only families to be considered would be those for which complete fertility data, relevant to the present study, were available. The sample thus selected contained 29,450 families, from among 42 Standard Metropolitan Statistical Areas. A listing, by SMSA, of the number of families contained in the final sample is provided in the Appendix. The sample may be considered representative of husband and wife families of women of childbearing age, for which complete data were available regarding fertility prior to the taking of the census.

#### Operational Definitions

Utilizing the data, from the personal records of the members of families contained in the sample described above, aggregate descriptive statistics, relating to the variables in the suggested model of fertility and female participation in the labor force, were calculated for each selected Standard Metropolitan Statistical Area. As the computations of several of these indices were somewhat complex, it is useful to devote some effort to description of the procedures which were followed. In addition, algebraic formulae describing the various indices are presented in the Appendix. Indices, relating to structural conditions of female employment, were calculated by consideration of data regarding occupation, income from occupation, and the nature and extent of employment of husbands and wives in the sample. In computation of these indices, attention was limited to

persons over 14 years of age who had been employed for pay during the week preceding the census, and who had worked at least 40 weeks in 1969. The number of such persons, and mean income from occupation by sex, were computed for each of the 12 major census occupational categories considered by the United States Census in 1970 (U.S. Bureau of the Census, 1972, pp. 100-110).

In effect, the respective distributions of husbands and wives and their mean incomes by occupational category were considered in computations of the indices of Standard Measure of Differentiation, prevalence of secondary careers, income of employed women, and sexual income differentiation. As the descriptive statistics calculated were based on persons meeting the above occupational criteria, who were also families in which both spouses were present, and the wife was age 15 to 49, the figures obtained describe only that rather specific population and should only be taken as crude estimates of the entire population of the respective Standard Metropolitan Statistical Area.

The Standard Measure of Differentiation was computed in the manner described in preceding chapters, by considering the sample of persons meeting the above occupational criteria. The figures obtained are provided in the Appendix, and may be interpreted as the standardized percentage of husbands, or the percentage of wives, employed for pay during the week preceding the census, who would have to change occupations in order that both husbands and wives would have the same standardized percentage distributions among the major census occupational categories.

The prevalence of secondary careers index was represented by the percentage of all persons employed for pay during the week preceding the census, who had indicated an occupation which was within the clerical, sales, service, farmers and farm managers, or farm laborers and farm forepersons categories.

Calculation of the absolute level of the income of employed women, and the sexual income differentiation index, involved consideration of the 5 percent census long form questionnaire personal record items P37-39, P40-42, P43-45 (U.S. Bureau of the Census, 1972, p. 75). These items were summed to obtain an estimate of the individual husband's or wife's income from their occupation. Several problems inherent in the structure of the census confound these measures. In the first place, the items referred to the year 1969, although the occupation reported for the individual was his current occupation. It was, therefore, necessary to assume that the individual's occupation in 1969 was the same as at the time the census was taken. The three questionnaire items referred to three types of income, which were assumed to be mutually exclusive. Item P37-39 referred to "earnings in 1969: Wages, Salary Commissions, Bonuses, or tips from all jobs, and comprised a range from 0 to \$50,000 or more, with incomes reported in \$100.00 intervals and represented by the lower limit of the interval" (U.S. Bureau of the Census, 1972, p. 75).

Census item P40-42 referred to "Earnings in 1969: Non-Farm Business, Professional Practice, or Partnership: and followed the same income breakdown as did item P37-39, but included, in addition, a negative income range from a \$1.00 loss, to a loss of \$9900 or more

(U.S. Bureau of the Census, 1972, p. 75). For present purposes, such negative incomes were treated as 0, increasing the risk of overestimation of income from occupation, but reducing the risk of erroneously treating a tax reduction maneuver as affecting real income. Item P43-45 refers to "Earnings in 1969: Own Farm" and follows the same range and coding as item P40-42 (U.S. Bureau of the Census, 1972, P. 75). Again, indications of negative income were treated as 0. In the case of all items, incomes from \$1.00 to \$99.00 were treated as \$50.00, and so forth, with hundred dollar intervals thereafter from \$100.00 to \$199.00 to \$49,900 to \$49,999. Incomes of \$50,000 or more were treated as \$50,050. This procedure provided consistency with the lower income categories, at the cost of underestimation of the upper income range. The individual's total income from his occupation was then calculated by the summation of P37-39, P40-42, and P43-45. This produced a possible range of income from occupation of 0 to \$150,150, although no persons approached this upper limit.

Through the use of this indicator of the individual's income from his occupation, aggregate indices of the mean income of employed women and the sexual income differentiation were calculated. Income of employed women was calculated by computation of the mean income of all wives in the sample who met the occupational criteria described previously. Sexual income differentiation was a bit more difficult to compute. In order that the numerator (occupational distribution-standardized female incomes) and the denominator (occupational distribution-standardized male incomes) would be drawn from the same set of occupational categories, it was necessary to exclude from

consideration for both sexes any occupational category, of a given SMSA, for which the sample provided either no husbands, or no wives, for whom income data were available.

Considering only the remaining occupational categories, the mean total income from occupation was computed, by occupational category and Standard Metropolitan Statistical Area. Within each SMSA the mean income of wives in each category was multiplied by the proportion of wives in that category, of all wives fulfilling the employment criteria previously discussed. These products were then summed in order to produce the numerator of the sexual income differentiation formula. The denominator of the formula was produced by multiplying the mean income of husbands in each occupational category, fulfilling the employment criteria, by the percentage distribution of employed females used in the numerator. With division, and multiplication by 100, the sexual income differentiation index, SID, is produced. This index may be interpreted as the percentage which wives' aggregate salaries, for full time work, would have comprised of husbands' aggregate salaries, for full time work, if husbands had been distributed among the major census occupational categories in the same pattern as were wives.

Census items P20-21, regarding the number of children ever born to the wife in the family, P9-11, regarding ages of family members, and P31, regarding employment status (U.S. Bureau of the Census, 1972, pp. 71, 73, 74) allowed calculation of the dependent variables of rates of female participation in the labor force and fertility, as well as the independent variable of parity. Age specific labor force participation rates were calculated by coding each wife's employment

status as 0 if the variable P31 on her personal record indicated that she was not in the labor force. If that variable indicated that the wife was employed, unemployed but seeking work, or in the armed forces, the wife was coded as in the labor force and her employment status was coded as 1. With these values, the mean wife's employment status was calculated by five year age groups from age 15-19, to age 45-49, and multiplied by 100 to produce the percentage of women in the labor force from that age group, by SMSA, and thus, the age specific rates of female participation in the labor force.

Fertility rates by age category were calculated by considering census variable P9-11 (U.S. Bureau of the Census, 1972, p. 71) on the records of the children in the family. Data on children were obtained, in the present sample, for the ten oldest children in the family. As previously noted, families with more than 10 children living at home were excluded from the sample as data ages of children were incomplete. Forty-eight of 29,498 families were thus excluded from the study on this basis. For the remaining 29,450 families, the number of children ever born to a given wife, in the year preceding the census, was ascertained by counting the number of children under one year of age listed on the family records. Arithmetic means of this number for all families were taken by age group, within each SMSA, and multiplied by 1000 to produce the age specific fertility rates.

Marital parity was determined by subtracting the number of children under one year of age, in the family, from the total number of children ever born to the wife. The mean family marital parity index was then calculated by age groups, within each SMSA, as well as for the entire SMSA.

Two concepts remain to be operationalized, relative income affluence and parity standardized relative income affluence. Relative income affluence required consideration of census item P56-58 on the husband's record (U.S. Bureau of the Census, 1972, p. 76). Consistent with the treatment of this concept in previous sections, the ratio of the husband's total income from all sources, to the mean total income of husbands age 35 to 44 in the same occupational category, was computed. Although coded according to the same range and treated in the same manner, census item P56-59 referred to income from all sources, unlike items P37-39, P40-42, and P43-45 which referred to income from occupation. The mean husband total income was calculated by occupational group for husbands age 35 to 44. These means were then divided into the total incomes of husbands in that occupational category. This ratio was then multiplied by 100 to produce the family's relative income affluence index. Mean relative income affluence by age groups of wives were then computed within each SMSA. Division of each family's relative income affluence index by the family marital parity plus two and multiplied by 100, produced the index of parity standardized relative income affluence. As noted in Chapter 1, addition of two is the denominator standardized relative income affluence, to the total number of persons dependent upon the husband's income.

#### Formulation of Cross-Sectional Hypotheses

Having completed description of the operationalization of the variables in the suggested model of female participation in the labor force and fertility, attention must now be turned to explicit

formulation of hypotheses appropriate to the cross-sectional data which have been described. Seven independent variables have been described which are expected to be significantly influential on rates of female participation in the labor force, and on rates of fertility. In addition, for several of these independent variables, it is expected that the strength of the relationships may vary predictably among families by age groups of the wives, in the families under study. Certain intercorrelations among the independent variables are also predicted. These relationships have been graphically summarized in Figure 2 of the first chapter. However, it is necessary that hypotheses be stated in terms which permit statistical, descriptive summary, as well as inferential conclusions, regarding the predicted relationships. Well suited to this purpose is a multiple regression approach to analysis of variance (Kerlinger and Pedhazur, 1973, pp.53-78; Blalock, 1972, p. 450-459), and it is useful to summarize hypotheses in terms of the components of this statistical approach.

The theoretical model in Figure 5 suggested at least two multivariate models, which respectively consider rates of female participation in the labor force, and fertility, as dependent variables. Each model would contain seven independent variables, and could be applied to seven age levels, as well as to the complete sample without controls for ages of wives. Thus, eight multiple regression models are suggested for each dependent variable, a total of 16 empirical models in all. These would suggest 112 hypotheses. For this reason, in the interest of expedience, as hypotheses are presented, it would be recognized that, unless otherwise indicated, each hypothesis is

intended to apply to each sample of families by ages of wives, as well as to the entire sample without age controls. As in Chapter 5, hypotheses to be presented comprise four sets, and are numbered so as to correspond to the theoretical proposition from which they are drawn. The first set considers inter correlations of the dependent variables. The second set considers interrelationships among independent variables. Sets three and four consider correlations of the seven independent variables on rates of female participation in the labor force, and fertility.

At this point it is appropriate to offer the first cross-sectional hypothesis, which suggests the relationship between the dependent variables.

Cross-sectional Hypothesis 1. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between female labor force participation rates and fertility rates, by age groups.

Although multiple regression techniques may assume that there are no strong associations among independent variables, theoretical propositions offered in Chapter 1 have suggested that certain intercorrelations should be expected. Just as these theoretical relationships have been formally stated, their empirical counterparts should be explicitly presented as testable hypotheses. Such hypotheses may be tested by investigation of the zero order Pearsonian  $r$  correlations which obtain among the independent variables, in the process of checking the model for multicollinearity. Hypotheses of this type include the following.

Cross-sectional Hypothesis 12. Among Standard Metropolitan Statistical Areas, a negative relationship is exhibited between the prevalence of female sex typed secondary careers, PSC, and the mean income of employed women.

Cross-sectional Hypothesis 13. Among Standard Metropolitan Statistical Areas, a negative relationship is exhibited between the prevalence of female sex typed secondary careers, PSC, and the index of sexual income differentiation, SID.

Cross-sectional Hypothesis 14. Among Standard Metropolitan Statistical Areas, a positive relationship is exhibited between the Standard Measure of Differentiation, SMD, and the prevalence of female sex typed secondary careers, PSC.

Cross-sectional Hypothesis 34. Among Standard Metropolitan Statistical Areas, a positive relationship is exhibited between mean relative income affluence and the mean marital parity.

Hypotheses concerning relationships of several independent variables to a dependent variable may be efficiently tested and evaluated through the use of multiple regression analysis.

The multiple regression approach to data analyses is desirable because of its ability to simultaneously test several different hypotheses. Of the various elements of multiple regression analysis, we shall here be concerned with three types of statistics calculated for each model. In the first place, it will be of interest to consider the zero order Pearsonian  $r$  correlations of the independent variables with the dependent variables. Second, the beta weights of the respective independent variables in the multiple regression

formulae will be considered. A beta weight may be described as the slope of the regression line described by the Z scores of the given independent variable, and the residuals, or errors in the prediction of the values of the dependent variables, remaining after all other independent variables have been considered such as to optimize prediction. A third measure to be considered is the F-ratio for the statistical significance of the slope of the nonstandardized regression line described by the given independent variable and the residuals of the nonstandardized dependent variable, which remain after the influence of the other independent variables have been removed. As Kerlinger and Pedhazur have observed (1973, pp. 65-70), where this slope is statistically significant, the beta weight may be considered statistically significant, as may the proportion of variance in the dependent variable which is uniquely "explained," or reduced, by that independent variable. The square root of this variance is referred to as the part correlation. In addition, the rank order of the F-ratios, when compared across models as well as within models, will correspond to the rank order of the proportions of variance "explained" by the given independent variables, when degrees of freedom are constant. For this reason, the rank orders of the F-ratios, once the sign of the beta weight has been attached, may be considered in tests of hypotheses regarding third order relationships. Hypotheses concerned with third order relationships may, therefore, be stated in terms of the magnitude of the signed F-ratios, as these will indicate the directions, and relative strengths, of the relationships which would have been observed had the part correlations been considered directly. Third

order hypotheses may then be tested by consideration of the Spearman Rho rank order correlation coefficients of the correspondence between magnitudes of signed F-ratios and the age levels of the wives in the respective sub-samples to which the F-ratios apply.

Having clarified the procedures by which directions and strengths of relationships may be evaluated, attention may now be directed to specification of hypotheses concerning the relationships of the various independent variables to labor force participation rates of wives in the sample of families studied.

Cross-sectional Hypothesis 2. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between the Standard Measure of Differentiation, SMD, and female labor force participation rates by age groups.

Cross-sectional Hypothesis 4. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between the mean income of employed women and female labor force participation rates by age groups.

Cross-sectional Hypothesis 8. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between the index of sexual income differentiation, SID, and female labor force participation rates by age groups.

Cross-sectional Hypothesis 10. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between the prevalence of female sex typed secondary careers, PSC, and female labor force participation rates by age groups.

Cross-sectional Hypothesis 15. Among Standard Metropolitan Statistical Areas, a positive relationship is exhibited between the regression coefficients of the PSC index to the respective age specific female labor force participation rates, and the age levels to which the female labor force participation rates apply.

Cross-sectional Hypothesis 16. Among Standard Metropolitan Statistical Areas, a positive relationship is exhibited between the regression coefficients of the Standard Measure of Differentiation to the respective age specific female labor force participation rates, and the age levels to which the female labor force participation rates apply.

Cross-sectional Hypothesis 28. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between mean relative income affluence and female labor force participation rate, by age groups.

Cross-sectional Hypothesis 30. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between mean marital parity and female labor force participation rates, by age groups.

Cross-sectional Hypothesis 32. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between mean parity standardized relative income affluence and female labor force participation rate, by age groups.

Cross-sectional Hypothesis 35. Among Standard Metropolitan Statistical Areas, a negative relationship is exhibited between the regression coefficients of mean relative income affluence to the

respective age specific female labor force participation rates, and the age levels to which the female labor force participation rates apply.

The preceding hypotheses complete the formal description of relationships to be tested regarding the effects of structural conditions of female employment and familial factors on female labor force participation rates. A similar series of hypotheses must now be presented in order to complete description of the relationship regarding the suggested effects of these factors on fertility rates. These remaining hypotheses are also appropriate for testing and evaluation by means of the previously discussed statistical techniques.

Cross-sectional Hypothesis 3. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between the Standard Measure of Differentiation, SMD, and fertility rates by age groups.

Cross-sectional Hypothesis 5. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between the income of employed women and fertility rates by age groups.

Cross-sectional Hypothesis 9. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between the sexual index of income differentiation, SID, and fertility rates by age groups.

Cross-sectional Hypothesis 11. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between the prevalence of female sex typed secondary careers, PSC, and fertility rates by age groups.

Cross-sectional Hypothesis 29. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between mean relative income affluence and fertility rate, by age groups.

Cross-sectional Hypothesis 31. Among Standard Metropolitan Statistical Areas, negative relationships are exhibited between mean marital parity and fertility rate, by age groups.

Cross-sectional Hypothesis 33. Among Standard Metropolitan Statistical Areas, positive relationships are exhibited between mean parity standardized relative income affluence and fertility rate, by age groups.

Cross-sectional Hypothesis 36. Among Standard Metropolitan Statistical Areas, a negative relationship is exhibited between the regression coefficients of mean parity standardized relative income affluence to the respective age specific fertility rates, and the age levels to which the fertility rates apply.

This completes the processes of operationalization and hypothesis formulation. The goals of clarifying the nature of the sample, and the data, as well as the procedures used to render the original model of Figure 5 into testable form, have been accomplished. Chapter 7 presents the findings of the statistical calculations, and suggests generalizations regarding the effects of structural and familial conditions on patterns of labor force participation and fertility.

## CHAPTER 7

### FEMALE PARTICIPATION IN THE LABOR FORCE AND FERTILITY: EMPIRICAL FINDINGS

Previous chapters have attempted to develop a set of logically related theoretical propositions which would contribute to clarification, and comprehension, of the relationship between female participation in the labor force and fertility. A rather extensive set of propositions was developed in Chapter 1, and Chapters 4 and 5 developed operationalized indicators which allowed formulation of empirical hypotheses corresponding to certain of the theoretical propositions. Overall the results were inconclusive. Interrelationships of the dependent variables were found to exhibit less strength and consistency than had been expected. Although the Standard Measure of Differentiation was generally found to be inversely related to female labor force participation rates, it was also found to be negatively related to rates of fertility. Unexpected inverse relationships also obtained between the index of the prevalence of female sex typed secondary careers and rates of fertility and female participation in the labor force. However, the tendency for the relationship of the PSC index with rates of fertility to become more positive by increasing age levels suggests that the availability of secondary careers may discourage fertility among the younger age levels, while possibly encouraging fertility among older age groups. As expected, the income of employed women was positively related in longitudinal perspective

to rates of female participation in the labor force, and, generally, negatively related to rates of fertility.

In the present chapter, the relationships of these structural conditions of female employment to rates of fertility and female participation in the labor force will be observed in cross-sectional rather than longitudinal perspective. The statistical analyses to be presented were guided by the hypotheses developed in Chapter 6. Tables are organized so as to correspond the order in which the hypotheses were presented. Following evaluation of cross-sectional relationships suggested by the model, findings will be summarized and compared with the longitudinal findings.

Table 14 reports the intercorrelations of the two dependent variables, female labor force participation rates and fertility rates, by age, predicted by cross-sectional hypothesis 1. Although researchers previously cited (Blake, 1967) have described the inverse relationship between employment and fertility among women as being among the most consistent and theoretically plausible, data utilized in the present study suggested that this relationship is more problematic than may have been believed. The results of cross-sectional analyses indicated even weaker and less consistent relationships between the dependent variables than were indicated by the longitudinal data. While this would support the position that the inverse relationship, to the extent to which it exists, is spurious, these findings are somewhat surprising in that the inverse relationship was an assumption of the present research. Inverse relationships of sufficient strength to indicate statistical significance at a probability level of .05 or

TABLE 14. PEARSONIAN  $r$  ZERO ORDER COEFFICIENTS OF FERTILITY RATES AND FEMALE LABOR FORCE PARTICIPATION RATES, BY AGE GROUP OF WIVES<sup>a</sup>

Age Group of Wives	Coefficient
15-19	-0.1552
20-24	-0.4551 <sup>b</sup>
25-29	-0.1883
30-34	-0.2915 <sup>b</sup>
35-39	-0.0302
40-44	-0.3433 <sup>b</sup>
45-49	0.1266
Sum Female Labor Force Participation Rates, Age 15 to 49 with Total Fertility Rate	-0.2909 <sup>b</sup>

<sup>a</sup>Regressions based on 42 Standard Metropolitan Statistical Areas.  
<sup>b</sup> $p \leq .05$ .

less, were obtained only for comparisons of the rates for age groups 20 to 24, 30 to 34, and 40 to 44. Comparison of the Total Fertility Rates and the sum of the age specific female labor force participation rates produced a statistically significant correlation of  $-.291$ . Age groups 15 to 19, 25 to 29, 35 to 39, and 45 to 49 did not produce statistically significant correlations, although the relationships which were produced were in the predicted direction. It would appear that the proportion of women both working and bearing a child during a given year, or neither working or bearing a child, were underestimated, although the family situation variables were introduced into the model in an attempt to build prediction of such events into the model.

The second set of hypotheses, hypotheses 12, 13, 14 and 34, refers to predicted intercorrelations among the independent variables in each of the age controlled multiple regression models. Correlation matrices of zero order relationships, by age levels of wives, are reported in Tables 15 through 23. Attention will first be given to the model pertaining to age group 15 to 49. In effect, this model considers the entire sample. Attention will then be given to the intercorrelations of the independent variables, by 5-year age groups of the wives of the sub-samples.

Table 15 presents the independent variable correlation matrix for age group 15 to 49, i.e. the entire sample. It may be observed that the interrelationships among the independent variables did not obtain. Neither the Standard Measure of Differentiation nor the mean income of employed women nor the index of sexual income differentiation, were found to be significantly correlated to the

TABLE 15. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUP OF WIVES, 15 TO 49.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	-0.0745	0.0221	-0.1173
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	0.1957	-0.0987	0.0681
Mean Income of Employed Women			0.2327	-0.1738	-0.2990 <sup>b</sup>	0.0862
Sexual Income Differentiation				0.1106	-0.3225 <sup>b</sup>	0.3792 <sup>b</sup>
Mean Relative Affluence					0.0243	0.6005 <sup>b</sup>
Mean Marital Parity						-0.7008

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p \leq .05$ .

prevalence of female sex typed secondary careers. Similarly, mean relative income affluence was found to have no relationship with mean marital parity. However, in this model, the mean parity standardized relative income affluence index was significantly related to the index of sexual income differentiation, mean relative income affluence, and mean marital parity. Mean marital parity was also significantly related to mean income of employed women and the index of sexual income differentiation.

Although statistically significant, the above relationships do not present a great problem in the present application of the multiple regression approach to analysis of variance, although inferences must be drawn with caution. In the present case, the multiple regression approach serves to permit the researcher to consider the rank order of importance of each of the independent variables, in prediction of the dependent variables, with the effects of all other independent variables in the models statistically controlled.

High multicollinearity may reduce the amount of variance uniquely explained by a given independent variable, but this reduction should not be viewed as artificial. The problem of multicollinearity is primarily that it may lead to beta weights which are difficult to compare across models, as well as reduce the improvements in total prediction possible by inclusion of an additional variable known to be highly related to an independent variable already in the model.

In the present case beta coefficients and F-ratios of the multiple regression formulae were obtained under the mathematical assumption that the given variable was the last introduced into the

computations. As each model contained the same variables with the appropriate values of the family situation variables for the age group under consideration, the models are comparable. However, in interpreting the results of the present study one should remain cognizant of the instability of beta weights resulting from multicollinearity. For this reason empirical tests of hypotheses and interpretation will include consideration of the Pearsonian  $r$  zero order coefficients of the relationship of each independent variable to the dependent variables, as well as of the beta weights and F-ratios obtained from the multiple regression models.

As the values of the structural conditions of female employment remained constant for each model, the relationships predicted by cross-sectional hypotheses 12, 13, and 14 need not be considered further. These hypotheses have been rejected. However, cross-sectional hypothesis 34, regarding mean family relative income affluence and mean marital parity, must be evaluated for each age level.

Table 16 reports on intercorrelations of the independent variables for the model applicable to age group 15 to 19. In this case cross-sectional hypothesis 34 was supported and a statistically significant Pearsonian  $r$  of .352 obtained. In addition to this predicted correlation, statistically significant correlations obtained between mean marital parity and the Standard Measure of Differentiation index, the prevalence of female sex types secondary careers index, and the index of mean relative income affluence. Mean relative income affluence was also significantly related to mean parity standardized relative income affluence. This last finding is mathematically

TABLE 16. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUP OF WIVES, 15 TO 19.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	-0.1186	-0.2741 <sup>b</sup>	-0.0944
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	-0.2199	-0.2902 <sup>b</sup>	-0.1420
Mean Income of Employed Women			0.2327	0.1127	-0.0442	0.1704
Sexual Income Differentiation				0.0988	0.0499	0.1180
Mean Relative Affluence					0.3520 <sup>b</sup>	0.9534
Mean Marital Parity						0.1622

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p \leq .05$ .

comprehensible in that marital parity would be expected to be very low for this group with a corresponding narrow range of variation. Thus, the high level of intercorrelation ( $r=.95$ ) is produced.

Table 17 refers to intercorrelations of independent variables in the model applicable to age group 20 to 24. In this case the predicted relationship of mean relative income affluence and mean marital parity did not obtain. Mean relative income affluence was, however, significantly related to the prevalence of female sex typed secondary careers index, mean income of employed women, and to mean parity standardized relative income affluence. Mean parity standardized relative income affluence was also significantly related to prevalence of female sex typed secondary careers, as well as mean marital parity. The relationships among mean relative income affluence, parity standardized relative income affluence, and the prevalence of female sex typed secondary careers may be a result of a narrow range of family parity values for age group 20 to 24, and the level of male white collar incomes in the young adult age levels. It may be remembered that the prevalence of female sex typed secondary careers represents the percentage of the total sample employed population engaged in clerical, sales, service and farming occupations. As few persons were in the farming category (the study dealt with metropolitan areas), the index would be expected to have reflected the proportion of white collar males in the sample as well. It may be that young white collar males tend to have lower relative affluence scores than young blue collar males. However, such conjectures should be viewed as suggestions for future research rather than conclusions.

TABLE 17. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUP OF WIVES, 20 TO 24.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	0.0852	-0.0502	0.0493
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	-0.3287 <sup>b</sup>	0.0478	-0.2957 <sup>b</sup>
Mean Income of Employed Women			0.2327	-0.3287 <sup>b</sup>	-0.1739	-0.2242
Sexual Income Differentiation				0.1661	-0.0823	0.1533
Mean Relative Affluence					0.0910	0.9061 <sup>b</sup>
Mean Marital Parity						-0.2591 <sup>b</sup>

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p \leq .05$ .

Table 18 deals with the intercorrelations among the independent variables affecting the study of age group 25 to 29. The predicted relationship of mean relative income affluence and mean marital parity obtained and was significant with probability equal to or less than .002 ( $r = .4344$ ). In addition, statistically significant relationships obtained between mean marital parity and mean income of employed women, as well as between the index of sexual income differentiation, and mean parity standardized relative income affluence. A significant relationship also appeared between mean relative income affluence and mean parity standardized relative income affluence. It may be noted that with succeeding age groups, this index declined, suggesting the plausibility of the argument that the relationship is largely explainable in terms of limitations on the range of parity.

The inter correlation matrix of the independent variables from the model for age group 30 to 34 is presented in Table 19. The predicted relationship of mean relative income affluence and mean marital parity did not obtain; however, mean relative income affluence was significantly related to the index of prevalence of female sex typed secondary careers, and the index of mean parity standardized relative income affluence. Mean parity standardized relative income affluence was also significantly correlated with the index of prevalence of female sex typed secondary careers, the index of sexual income differentiation, and mean relative income affluence. Mean marital parity was also significantly related to the mean income of employed women, and to the index of sexual income differentiation.

TABLE 18. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUP OF WIVES, 25-29.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	-0.1023	-0.1122	0.0043
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	0.0966	-0.1019	0.1173
Mean Income of Employed Women			0.2327	-0.1816	-0.3107 <sup>b</sup>	-0.044
Sexual Income Differentiation				0.0549	-0.1831	0.3187 <sup>b</sup>
Mean Relative Affluence					0.4344 <sup>b</sup>	0.6993 <sup>b</sup>
Mean Marital Parity						-0.2181

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p \leq .05$ .

TABLE 19. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUPS OF WIVES, 30 TO 34.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	-0.0535	-0.0266	-0.0804
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	-0.3042 <sup>b</sup>	0.1115	-0.3323 <sup>b</sup>
Mean Income of Employed Women			0.2327	-0.0679	-0.4065 <sup>b</sup>	0.2365
Sexual Income Differentiation				0.0517	-0.3591 <sup>b</sup>	0.2680 <sup>b</sup>
Mean Relative Affluence					0.0148	0.6324 <sup>b</sup>
Mean Marital Parity						-0.6456 <sup>b</sup>

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p \leq .05$ .

Intercorrelations of the independent variables in the model for age group 35 to 39 are presented in Table 20. The predicted relationship, again, did not obtain. Significant correlations were noted for the relationships of mean parity standardized relative income affluence with every other variable, with the exception of the standard measure of differentiation. In addition, mean marital parity was found to be statistically significantly related to the mean income of employed women, and to the index of sexual income differentiation.

For age group 40 to 44 (Table 21) the independent variables indicated less multicollinearity. The predicted relationship of mean relative income affluence and mean marital parity was not statistically significant. However, the relationship of mean relative income affluence to the income of employed women was statistically significant, as were the relationships of mean parity standardized relative affluence to mean income of employed women, the index of sexual income differentiation, mean relative income affluence, and mean marital parity.

Data for age group 45 to 49 indicated that the predicted relationship of mean relative income affluence and mean marital parity did not obtain. However, statistically significant relationships did obtain between mean relative income affluence and the indices of prevalence of female sex typed secondary careers and income of employed women. Significant relationships also appeared regarding the correlations of mean parity standardized relative income affluence, and the indices of prevalence of female sex typed secondary careers, mean income of employed women, mean relative income affluence, and mean marital parity.

TABLE 20. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUPS OF WIVES, 35 to 39.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	0.1690	0.1490	-0.1061
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	0.2323	-0.0760	0.2681 <sup>b</sup>
Mean Income of Employed Women			0.2327	0.1393	-0.3345 <sup>b</sup>	0.4289 <sup>b</sup>
Sexual Income Differentiation				-0.0161	-0.4197 <sup>b</sup>	0.3771 <sup>b</sup>
Mean Relative Affluence					0.0414	0.4851 <sup>b</sup>
Mean Marital Parity						-0.7472 <sup>b</sup>

<sup>a</sup>Structural indicator calculated for total sample without age controls.  
<sup>b</sup> $p < .05$ .

TABLE 21. PEARSONIAN  $r$  INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUPS OF WIVES, 40 TO 44.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	0.0944	0.1815	-0.1356
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	0.0303	-0.1097	0.0268
Mean Income of Employed Women			0.2327	0.3108 <sup>b</sup>	-0.2445	0.3951 <sup>b</sup>
Sexual Income Differentiation				0.2481	-0.0154	0.3186 <sup>b</sup>
Mean Relative Affluence					0.2337	0.4348 <sup>b</sup>
Mean Marital Parity						-0.6975 <sup>b</sup>

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup> $p < .05$ .

TABLE 22. PEARSONIAN r INTERCORRELATIONS OF INDEPENDENT VARIABLES FOR 42 STANDARD METROPOLITAN STATISTICAL AREAS, BY AGE GROUPS OF WIVES, 45-49.

	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Standard Measure of Differentiation <sup>a</sup>	-0.1205	0.1121	0.1202	0.0026	0.0810	-0.0908
Prevalence of Female Sex Typed Secondary Careers		0.0804	-0.0270	0.4559 <sup>b</sup>	-0.1145	0.4167 <sup>b</sup>
Mean Income of Employed Women			0.2327	-0.3436 <sup>b</sup>	-0.1077	-0.3076 <sup>b</sup>
Sexual Income Differentiation				-0.0397	-0.1893	0.1064
Mean Relative Affluence					0.0822	0.9707 <sup>b</sup>
Mean Marital Parity						-0.4162 <sup>b</sup>

<sup>a</sup>Structural indicator calculated for total sample without age controls.

<sup>b</sup>p ≤ .05.

Table 23 presents the Pearsonian  $r$  zero order correlations, and Spearman's Rho rank order coefficients which obtained for cross-sectional hypotheses regarding relationships of independent variables to rates of female participation in the labor force. Table 24 provides information regarding beta weights and F-ratios obtained from multiple regressions of the independent variables of female labor force participation rates.

As may be observed in Table 23, cross-sectional hypothesis 2, which predicted inverse relationships of the Standard Measure of Differentiation to rates of female labor force participation, was only partially supported. Only in the case of age group 40 to 44 did a statistically significant relationship obtain. However, with the exception of age group 15 to 19, all other age groups and the total sample produced the predicted inverse relationships.

Hypothesis 4 predicted positive relationships of age specific rates of female participation in the labor force with mean income of employed women. Again, statistically significant relationships did not obtain, and of those relationships which did obtain, those for age groups 25 to 29 through age group 40 to 44 were in negative, rather than positive directions. These findings were surprising in that in the longitudinal analyses strong positive relationships obtained. To further confound the issue, in the longitudinal analyses the standard income change index had only small relationships to female participation in the labor force, although these tended to be positive. Together, the cross-sectional and longitudinal findings suggest that the absolute level of female salaries may serve as a very important short

TABLE 23. PEARSONIAN  $r$  ZERO ORDER COEFFICIENTS OF OCCUPATIONAL STRUCTURE AND FAMILY SITUATION VARIABLES WITH FEMALE LABOR FORCE PARTICIPATION RATES<sup>a</sup>.

Age Group of Wives	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women	Sexual Income Differentiation <sup>b</sup>	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
15-19	0.1850	-0.0508	0.2082	0.3545 <sup>C</sup>	0.0569	0.1676	0.0115
20-24	-0.0949	0.0264	0.1201	0.2518	-0.1333	-0.3443 <sup>C</sup>	0.0055
25-29	-0.1197	0.1546	-0.2482	0.4359 <sup>C</sup>	-0.1057	-0.0995	0.0831
30-34	-0.1071	0.1458	-0.2199	0.2859 <sup>C</sup>	-0.0564	-0.2343	0.2379
35-39	-0.1676	0.0548	-0.1148	0.1776	0.1453	-0.2998 <sup>C</sup>	0.2892 <sup>C</sup>
40-44	-0.2900 <sup>C</sup>	0.2498	-0.1508	-0.0951	-0.1542	-0.3200 <sup>C</sup>	0.0839
45-49	-0.1086	0.0212	0.1732	0.0491	-0.2076	-0.1826	-0.1679
14-49	-0.0978	0.0999	0.0097	0.3473 <sup>C</sup>	-0.1252	-0.4565 <sup>C</sup>	0.2502
Spearman Rho of Pearsonian $r$ Ranks with Age Groups	-.7143 <sup>C</sup>	.3214	-.1429	-.7857 <sup>C</sup>	-.3929	-.1786	.1071

<sup>a</sup>Regressions based on 42 Standard Metropolitan Statistical Areas.  
<sup>b</sup>Structural indicator calculated for total sample without age controls.  
<sup>c</sup> $p \leq .05$ .

term deterrent, at least in part due to perceptions of relative improvement from the past. However, it is also necessary to suggest the conditions under which income factors may be related to labor force participation in cross-sectional perspective.

The positive relationships of the index of sexual income differentiation to female labor force participation rates suggested by hypothesis 8 did obtain. Statistically significant correlation coefficients were observed for age groups 15 to 19, 25 to 29, and 30 to 34, as well as when the entire sample was considered. In addition, age group 20 to 24 produced a correlation coefficient of .252, with a significance level less than or equal to .054. Only age group 40 to 44 produced a relationship which was not in the predicted direction. These findings contrast with those obtained in the longitudinal study, and support the suggestion of Chapter 5, that the longitudinal relationships were distorted by the increase in women's salaries occurring simultaneously with a more rapid increase in those of men.

Under the assumption that in cross-sectional perspective changes in salaries by sex are randomly distributed with reference to all the variables considered in the models, it may be suggested that under conditions of stability of incomes, the more salaries of women approximate those of men, the greater will be the extent of female participation in the labor force. However, the broader effects of economic conditions under which women's salaries might exceed salaries of males have not been considered, and further research should be directed toward this question. Further research should also be directed toward more adequate resolution of the differences between the longitudinal and cross-sectional findings.

Cross-sectional hypothesis 10 suggested positive relationships between the prevalence of female sex typed secondary careers and rates of female participation in the labor force. In no case was the relationship which obtained found to be statistically significant. However, such relationships as were observed were in the predicted direction, with the exception of that which obtained for the youngest age group.

Cross-sectional hypotheses 15 and 16, regarding third order relationships of structural conditions of female employment to age specific rates of female labor force participation, may also be evaluated utilizing the information in Table 23. Cross-sectional hypothesis 15 suggested that the correlation of the prevalence of female sex typed secondary careers with rates of female participation in the labor force would be positively related to the ages of wives in the sub-samples to which the rates applied. Although the obtained Spearman's Rho was not statistically significant, the direction of the hypothesis was fulfilled, suggesting that the availability of such careers may serve as a slightly greater inducement to labor force participation of women over age 30 than for younger women.

Cross-sectional hypothesis 16 predicted a positive relationship between the magnitude of the Pearsonian  $r$  correlation coefficients of regressions of the Standard Measure of Differentiation (SMD) on labor force participation rates of wives, and the age levels to which the rates applied. This hypothesis was refuted, as the Spearman's Rho coefficient was found to be  $-.714$ , and significant with a probability less than or equal to  $.05$ . This finding suggests that segregation

of women within the occupational structure may have served as a deterrent to labor force participation of wives, particularly among the older age groups. However, it should again be noted that in only one case was the relationship of the Standard Measure of Differentiation to the respective female labor force participation rate significant. Thus, the effect of this variable, without further controls, appeared to be quite small.

Although not hypothesized, the strengths of the correlations of the index of sexual income differentiation with age specific rates of female participation in the labor force, were found to be negatively related to the ages of the sub-populations to which the rates applied. The Spearman's Rho which obtained was statistically significant at the .05 level. It may be suggested that the importance of male and female income equality, as an inducement to labor force participation of wives, was greatest among women under 30 years of age, at least for the case of the United States in 1970.

Consistent with hypothesis 38, negative relationships between mean relative income affluence and age specific female labor force participation rates were obtained for all age groups, with the exception of age group 35 to 39. However, no relationship is statistically significant, and this may suggest the need to standardize the relative income affluence index to family parity.

Mean marital parity was expected to be negatively related to female labor force participation rates (hypothesis 30). This expectation was fulfilled for all age groups and for the entire sample. However, only age groups 20 to 24, 35 to 39, and 40 to 44, and the

entire sample, produced significant zero order Pearsonian  $r$  coefficients.

Mean parity standardized relative income affluence produced positive relationships with female labor force participation rates, in contrast to the negative relationship predicted in hypothesis 32.

Finally, it may be observed that, as predicted by cross-sectional hypothesis 35, inverse relationships obtained between the magnitude of the correlations of relative income affluence and female labor force participation rates, and the ages of the sub-samples to which the correlations applied. However, the Spearman's Rho coefficient was not sufficiently large to be termed statistically significant. As the first order correlations tended to be negative, it may be suggested that relative income affluence may, at best, have only a slight deterrent effect on labor force participation of wives, and that to the extent to which this effect obtains, it is more likely to occur among populations of women in the latest childbearing years. Among younger women very little effect, deterrent or otherwise, was observed.

The preceding cross-sectional hypotheses must also be evaluated in terms of the results of multiple regression analyses of the independent variables on age specific female labor force participation rates. In the present, the researcher is concerned with the direction and relative strength of the association between a given independent and the dependent variable, in light of the remaining independent variables in the model. This information

may be ascertained through the use of multiple regression procedures and consideration of the resulting signs of the beta weight and the F-ratio of the significance of the unique contribution of each respective independent variable to the total variance explained by the multiple regression model. Table 24 provides this information for the results of multiple regression analyses for each age specific model of female participation in the labor force.

Returning attention to cross-sectional hypothesis 2, within the context of the multiple regression models, the prediction of a negative relationship between the Standard Measure of Differentiation and of female labor force participation rates was partially supported. Although none of the obtained relationships were statistically significant, negative relationships were obtained in all cases except that of age group 15 to 19.

Within the context of the multiple regression models, cross-sectional hypothesis 4, which predicted positive relationships of mean income of employed women to rates of female participation in the labor force, received conflicting results. Positive relationships were obtained only among the youngest and oldest age categories. Statistically significant negative coefficients obtained only for correlations involving age groups 25 to 29 and 30 to 34. This suggests that for these age levels, consideration of the mean income of employed women, by SMSA, significantly reduced the error in prediction of female labor force participation rates.

TABLE 24. MULTIPLE REGRESSION COEFFICIENTS OF OCCUPATIONAL STRUCTURE AND FAMILY SITUATION INDEPENDENT VARIABLES ON FEMALE LABOR FORCE PARTICIPATION RATES, BY AGE GROUP OF WIVES<sup>a</sup>.

Age Group of Wives	Coefficient	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>b</sup>	Mean Income of Employed Women <sup>b</sup>	Sexual Income Differentiation <sup>b</sup>	Mean Relative Income Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Age 15-19	beta	.081	-.116	.111	.317	-.563	-.072	.495
	F Signed F <sup>c</sup>	.233	.483	.463	3.941	.652	.107	.552
Age 20-24	beta	-.112	-.026	-.050	.289	-.486	-.191	.339
	F Signed F	.496	.025	.080	3.041	.551	.491	.274
Age 25-29	beta	-.145	.213	-.413	.540	-.401	.087	.168
	F Signed F	1.197	2.557	8.194 <sup>d</sup>	13.157 <sup>d</sup>	1.259	.109	.240
Age 30-34	beta	-.012	.278	-.462	.276	-.555 <sup>d</sup>	.199	.844 <sup>d</sup>
	F Signed F	.007	3.661	9.711 <sup>d</sup>	3.703	5.086 <sup>d</sup>	.592	6.529 <sup>d</sup>
Age 35-39	beta	-.149	-.011	-.260	.128	.252	-.362	-.053
	F Signed F	.784	.004	2.242	.525	.951	1.233	.017
		3	3	3	3	6	3	3

TABLE 24 - CONTINUED.

Age Group of Wives	Coefficient	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>b</sup>	Mean Income of Employed Women <sup>b</sup>	Sexual Income Differentiation <sup>b</sup>	Mean Relative Income Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Age 40-44	beta	-.232	.145	-.240	.106	.471	-.965	-.769
	F Rank of Signed F	2.313 1	.920 5	2.123 4	.392 2	2.183 7	5.479 <sup>d</sup> 1	2.884 1
Age 45-49	beta	-.133	.078	.032	.056	.309	-.439	-.635
	F Rank of Signed F	.646 4	.166 4	.029 6	.109 1	.577 5	2.708 2	2.061 2
Age 15-49	beta	-.120	.090	-.222	.327	-.092	-.545	-.202
	F Rank of Signed F	.667 4	.334 4	2.120 6	4.269 <sup>d</sup> 1	.087 5	2.488 2	.210 2
Spearman Rho of Signed F Ranks with Age Groups		-.571	.429	-.143	-.821 <sup>d</sup>	.571	-.643	-.750 <sup>d</sup>

a. Regressions based on forty-two standard metropolitan statistical areas.

b. Structural Indicator calculated for total sample without age controls.

c. Rank among age groups.

d.  $P < .05$ .

Cross-sectional hypothesis 8 received partial support from the multiple regression analyses. Positive relationships obtained between the index of sexual income differentiation and female labor force participation rates. The results were statistically significant in the case of age group 25 to 29, as well as when the entire sample was considered.

The predicted positive relationships of prevalence of female sex typed secondary careers to female labor force participation rates suggested by hypothesis 10 obtained in all cases except those wives' age groups 15 to 19, 20 to 24, and 35 to 39. However, in no case was the predicted positive relationship found to be sufficiently strong to be termed statistically significant.

When the third order relationships predicted by cross-sectional hypotheses 15 and 16 were evaluated utilizing the ranks of the signed F-ratios, similar results were obtained as when these relationships were tested utilizing the Pearsonian  $r$  zero order coefficients. In accordance with hypothesis 15, the predicted positive rank order association obtained between the signed F-ratios of the contributions of the prevalence of female sex typed secondary careers with the age levels of wives in the sub-samples to which the F-ratios applied. However, the observed Spearman's Rho coefficient was not statistically significant.

In the case of cross-sectional hypothesis 16, the predicted negative rank order association of the F-ratios of the relationships of the Standard Measure of Differentiation to female labor force

participation rates by age levels of wives also obtained. Furthermore, as reported in Table 24, the Spearman's Rho coefficient was found to be statistically significant. Cross-sectional hypothesis 16 was, therefore, supported.

Although not predicted by any cross-sectional hypothesis, a statistically significant third order relationship also obtained between the rank order of the signed F-ratios of the contributions of the sexual income differentiation index to prediction of labor force participation of wives and the age levels of wives to which the F-ratios applied.

Cross-sectional hypothesis 28, which predicted negative relationships between mean relative income affluence and female labor force participation rates, received inconsistent support. Multiple regression analyses produced negative relationships for the four youngest age groups and for the sample as a whole. In the case of age group 30 to 34, the contribution of relative income affluence to prediction of the female labor force participation rate was found to be statistically significant.

Consistent with cross-sectional hypothesis 30, negative relationships were found for the regression of mean marital parity on female labor force participation rates within the context of the multiple regression models. Only in regard to age groups 25 to 29 and 30 to 34 did positive coefficients result. The contribution of mean marital parity to the multiple regression prediction of female labor force participation was statistically significant for age group 40 to 44.

Less support is obtained for cross-sectional hypothesis 32, which predicted a negative relationship between mean parity standardized relative income affluence and female labor force participation rates. Multiple regression analyses yielded negative relationships among the three oldest age groups, and when the entire population was considered. However, positive relationships obtained among the younger age groups and for age group 30 to 34. The contribution to the prediction of the female labor force participation rate was statistically significant.

Finally, concerning the prediction of cross-sectional hypothesis 35, it was observed that the contribution of relative income affluence to female labor force participation rates tended to increase, although inconsistently, with age of wives in the respective subsamples. Therefore, the prediction of a negative relationship appears false, and cross-sectional hypothesis 35 is rejected.

Attention may now be directed to the total predictability of the respective multiple regression models of female labor force participation by age level of wives. Table 25 reports the multiple regression coefficients by age levels of wives. The multiple  $r$  coefficients, when squared, indicate the proportion by which error in prediction of the respective age specific rates are reduced by simultaneous consideration of all seven independent variables. Of the eight multiple regression models, the only statistically significant coefficients were those for age groups 25 to 29 and 30 to 34, and that for the multiple regression which involved the entire sample.

Leaving the question of statistical significance aside, Table 25 also reports on prediction of female labor force participation rates. It compares percentage improvement provided by multiple regression consideration of all seven independent variables, over that provided by consideration of only the most strongly related independent variable, as reported by Table 23. Improvements range from 8 percent for age group 15 to 19, to 32 percent for age group 30 to 34. Multiple regressions for prediction of the sum of the age specific female labor force participation rates improved prediction by 13.3 percent over the level provided by consideration of mean marital parity alone.

Having completed the review of the multiple regression findings concerning the proposed models of female labor force participation rates, attention is now directed toward the proposed determinants of fertility rates. Tables 26, 27, and 28 report the results of statistical analyses concerning suggested relationships of the independent variables to rates of fertility, among wives in the sample of families under study.

As may be observed in Table 26, the prediction of positive relationships by cross-sectional hypothesis 3 received limited support. The directions of the proposed relationships of the Standard Measure of Differentiation to age specific fertility rates were found to correspond to predictions for all but the two youngest groups. The strengths of the relationships were statistically significant, however, only for age group 25 to 29. It may be suggested that for this age group, at least, occupational sexual segregation may serve as an inducement to fertility.

TABLE 25. PROPORTION VARIANCE IN FEMALE LABOR FORCE PARTICIPATION RATES EXPLAINED BY MULTIPLE REGRESSIONS, BY AGE GROUP OF WIVES<sup>a</sup>

Age Group of Wives	Multiple R	Proportion Variance Explained Multiple R <sup>2</sup>	F-ratio Multiple Regression
15-19	.454	.206	1.260
20-24	.456	.207	1.272
25-29	.660	.436	3.749 <sup>b</sup>
30-34	.637	.408	3.345 <sup>b</sup>
35-39	.455	.207	1.267
40-44	.549	.301	2.094
45-49	.383	.147	.837
15-49	.585	.342	2.523 <sup>b</sup>

<sup>a</sup>Regressions based on sample of 42 Standard Metropolitan Statistical Areas.

<sup>b</sup> $p \leq .05$ .

TABLE 26. PEARSONIAN  $r$  ZERO ORDER COEFFICIENTS OF OCCUPATIONAL STRUCTURE AND FAMILY SITUATION VARIABLES WITH FERTILITY RATES, BY AGE GROUP OF WIVES<sup>a</sup>

Age Group of Wives	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers <sup>b</sup>	Mean Income of Employed Women <sup>b</sup>	Sexual Income Differentiation <sup>b,c</sup>	Mean Relative Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
15-19	-0.0251	-0.2147	-0.1582	-0.3272	-0.0492	0.2186	-0.0676
20-24	-0.0287	-0.0506	-0.2203	-0.2178	0.2350	0.0548	0.1845
25-29	0.3589	-0.0288	-0.0020	-0.0218	-0.0855	-0.0338	-0.0386
30-34	0.1835	0.0606	0.0919	-0.2164	-0.2444	0.1193	-0.3820
35-39	0.1924	0.0550	-0.0551	0.0542	-0.1060	0.1778	-0.1965
40-44	0.1841	-0.0122	0.1608	-0.1882	0.1577	-0.0149	0.0302
45-49	0.0348	0.0006	0.3144 <sup>c</sup>	0.1833	-0.0274	0.1276	-0.0819
15-49	0.1407	-0.1622	-0.1537	-0.3611 <sup>c</sup>	-0.1120	0.4215 <sup>c</sup>	-0.3059
Spearman Rho of Pearsonian $r$ ranks with Age Group	.3571	.6786	.8571 <sup>c</sup>	.8214 <sup>c</sup>	0.000	-.1071	-.2857

<sup>a</sup>Regressions based on 42 Standard Metropolitan Statistical Areas.

<sup>b</sup>Structural indicator calculated for total sample without age controls.

<sup>c</sup> $p < .05$ .

In the case of cross-sectional hypothesis 5, the predicted negative relationships of the mean income of employed women and age specific rates of fertility generally obtained among the younger age levels in regard to prediction of Total Fertility Rates, but these relationships were very small, and not statistically significant. Positive relationships occurred among age groups 30 to 34, 40 to 44, and 45 to 49. For age group 45 to 49, the positive relationship was statistically significant. For this eldest age group, factors associated with higher incomes of employed women may serve as inducements to fertility. Among the youngest age groups higher incomes may have a slight deterrent effect on fertility, in cross-sectional perspective. These correlation coefficients are markedly lower than those which obtained for the longitudinal data. The longitudinal findings may have reflected the particular case of the United States for the period 1955 to 1970, a period of steady increases in female incomes. If the cross-sectional study is assumed to simulate a situation in which variations in fertility due to the differential rates of income change are held constant, a dangerous assumption, it may be suggested that, as with labor force participation of wives, higher absolute incomes for employed women alone may produce only short term effects on fertility rates.

Again, in contrast to the longitudinal findings, but consistent with cross-sectional hypothesis 9, stronger and more consistent negative relationships were observed for the cross-sectional relationships of the index of sexual income differentiation to fertility rates. Only in the cases of age groups 35 to 39 and 45 to 49.

did positive relationships obtain. Although the negative relationships were stronger than those observed with reference to the mean income of employed women, only the coefficients for age groups 15 to 19, and those reflecting the prediction of the Total Fertility Rate, were statistically significant with a probability of .05 or less. With regard to predictions of Total Fertility Rates, it may be observed that the index of sexual income differentiation was the most important of the occupational structural variables, in terms of the zero order correlations.

Hypothesis 11 did not receive support from the analyses, except with regard to age groups 30 to 34, and 35 to 39. It was only for these age levels of wives that the predicted positive relationships between the prevalence of female sex typed secondary careers and rates of fertility were observed. These relationships were not found to be statistically significant. In cross-sectional perspective, therefore, there is little evidence to warrant further consideration of the PSC index, as presently calculated, as a predictor of fertility. Such evidence as is presented in Table 27, does, however, suggest that the prevalence of such occupational roles may actually serve as a deterrent to fertility for wives in the youngest age level. Nevertheless, the effects of this factor appear to be quite small.

The first of the family situation factors, mean relative income affluence, was expected to be positively related to fertility rates, in accordance with cross-sectional hypothesis 29. Only in the case of age groups 20 to 24 and 40 to 44 did this positive relationship occur, and these were not statistically significant.

Neither were the negative relationships which were observed statistically significant, including that for the regression involving the Total Fertility Rate.

The negative relationship of mean marital parity and rates by age groups predicted by cross-sectional hypothesis 31 were not observed. In contrast, all cases except those of age groups 25 to 29 and 40 to 44 yielded positive relationships. The relationship observed by regression of mean marital parity without control for age level on Total Fertility Rate, also produced a positive relationship. This was the only case in which the relationship was found to be statistically significant. With reference to the zero order regressions, mean marital parity was the independent variable which produced the strongest cross-sectional relationship to Total Fertility Rates. This same variable, it will be recalled, was also found to be the strongest cross-sectional zero order predictor of the sum of the age specific labor force participation rates of wives.

Cross-sectional hypothesis 33 predicted that mean parity standardized relative income affluence would be positively related to age specific fertility rates. This hypothesis must be rejected as negative relationships occurred in all age categories except age 20 to 24. Furthermore, the negative relationships which obtained for the regression involving age group 30 to 34, and for the regression involving the entire sample in prediction of Total Fertility Rates, were found to be statistically significant. Overall, it would appear that tentatively the general effect of mean parity standardized relative income affluence may be that of a deterrent to fertility. However,

in this case, as in those previously discussed, the relationships tended to be small and inconsistent, and such conclusions should be accepted only with great caution.

Cross-sectional hypothesis 36 predicted a negative third order relationship of the magnitude of the correlation coefficients of parity standardized relative income affluence with age specific fertility rates, and the age levels of wives to which the rates applied. Although a tendency was observed for the correlation coefficients to become more negative, the changes in the correlations were inconsistent, and the resulting Spearman's Rho rank order correlation coefficient was not statistically significant. Generally these findings suggest that this crude indicator of occupation, parity, standardized income per family member, is inversely associated with probability of childbearing due to some phenomenon or set of phenomena other than age.

Other third order relationships which did achieve statistical significance include the changing correlations of the mean income of employed women and the index of sexual income differentiation on fertility rates by age. These findings further support the contention that higher levels of womens' salaries may serve as a deterrent to fertility, primarily among younger women. However, as indicated by the positive Spearman's Rho coefficients, the Pearsonian  $r$  coefficients declined with age and tended to become positive among the eldest age categories.

The results of the multiple regression analyses of the relationships of the independent variables to age specific fertility rates and the Total Fertility Rate are reported in Table 27. These

TABLE 27. MULTIPLE REGRESSION COEFFICIENTS OF OCCUPATIONAL STRUCTURE AND FAMILY SITUATION INDEPENDENT VARIABLES ON FERTILITY RATES, BY AGE GROUP OF WIVES<sup>a</sup>.

Age Group of Wives	Coefficient	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women <sup>b</sup>	Sexual Income Differentiation <sup>b</sup>	Mean Relative Income Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Age 15-19	beta	.007	-.185	-.085	-.343 <sup>d</sup>	-.953	.403	.812
	F Rank of Signed F <sup>c</sup>	.225	1.293	.288	4.867 <sup>d</sup>	1.965	3.512	1.561
Age 20-24	beta	-.030	.047	-.061	-.258	.677	-.153	-.427
	F Rank of Signed F	.032	.076	.110	2.239	.985	.289	.402
Age 25-29	beta	.365	-.028	-.027	-.071	-.178	.093	.122
	F Rank of Signed F	5.016 <sup>d</sup>	.028	.023	.150	.162	.080	.083
Age 30-34	beta	.113	-.091	.187	-.215	.313	-.434	-.868 <sup>d</sup>
	F Rank of Signed F	.551	.326	1.312	1.857	1.337	2.326	5.700 <sup>d</sup>
Age 35-39	beta	.189	.145	-.015	.131	-.148	.175	-.056
	F Rank of Signed F	1.114	.703	.007	.492	.290	.257	.017
		6	7	4	6	2	5	4

TABLE 27 - CONTINUED.

Age Group of Wives	Coefficient	Standard Measure of Differentiation <sup>b</sup>	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women <sup>b</sup>	Sexual Differentiation <sup>b</sup>	Mean Relative Income Affluence	Mean Marital Parity	Mean Parity Standardized Relative Income Affluence
Age 40-44	beta F Signed F	.175 1.087 5	-.047 .079 4	.127 .486 5	-.239 1.651 4	.375 1.139 6	-.329 .526 2	-.311 .390 3
Age 45-49	beta F Signed F	-.036 .048 1	-.058 .093 3	.361 3.722 7	.134 .619 7	-.005 0.000 4	.248 .876 6	.143 .106 6
Age 15-49	beta F Signed F	.216 2.178	-.002 0.000	.001 0.000	-.347 <sup>d</sup> 4.836 <sup>d</sup>	-.570 3.365	.893 <sup>d</sup> 6.707 <sup>d</sup>	.819 3.460
Spearman Rho of Signed F Ranks with Age Groups		-.036	.143	.893 <sup>d</sup>	.821 <sup>d</sup>	.357	-.143	-.071

a. Regressions based on forty-two standard metropolitan statistical areas.

b. Structural indicator calculated for total sample without age controls.

c. Rank among age groups.

d.  $P < .05$ .

findings appear to closely parallel the patterns observed with regard to the zero order correlations. The positive relationships of the Standard Measure of Differentiation to age specific fertility rates predicted by cross-sectional hypothesis 3, obtained for every age group except age groups 20 to 24 and 45 to 49. Nonetheless, only in the case of age group 25 to 29 was the positive relationship statistically significant.

The very weak relationships of mean income of employed women to age specific fertility rates, combined with the observation that the beta weights were positive for three of the four oldest age groups of wives, led the researcher to reject cross-sectional hypothesis 5. The F-ratio approaching 0 would suggest that this variable contributed almost nothing to the prediction of Total Fertility Rates, at least within the context of the present regression models.

In contrast, the index of sexual income differentiation (SID) was found to contribute significantly to the prediction of both the Total Fertility Rate and the fertility rate of age group 15 to 19. The negative relationship predicted by cross-sectional hypothesis 9 was noted for all cases except age groups 35 to 39 and 45 to 49. As was the case with the zero order Pearsonian  $r$  correlations, the evidence suggested that, within the context of the multiple regression model of Total Fertility Rates, the index of sexual differentiation was the most important of the occupational structural variables under consideration.

Cross-sectional hypothesis 11 was rejected, as the predicted positive relationships of the prevalence of female sex typed secondary

careers to age specific fertility rates obtained for only three of the seven age groups. In no case was the F-ratio sufficiently large to indicate statistical significance.

Turning attention to the familial situation factors, cross-sectional hypothesis 29 predicted a positive relationship between mean relative income affluence and fertility rates. As indicated in Table 27, this relationship obtained for only three of the seven age groups, but in no case was the relationship statistically significant. In the model which considered the total sample in prediction of the Total Fertility Rate, the beta weight of the index of mean relative income affluence was negative. This would suggest that relative income affluence, or some factor external to the model but associated with relative income affluence, may serve as a slight deterrent to fertility, although the F-ratio was not of sufficient magnitude to indicate statistical significance. However, among families of wives age 20 to 24, relative income affluence may tend to encourage fertility.

Cross-sectional hypothesis 31 predicted negative relationships between mean marital parity and age specific rates of fertility. This hypothesis must be rejected as negative relationships obtained only with regard to three of the seven age groups. The only statistically significant relationship which occurred concerned the contribution of mean marital parity to prediction of the Total Fertility Rates when the entire sample, age group 15 to 49, was considered. In this case a positive relationship was observed. Rather than discouraging fertility, at the aggregate level, in cross-sectional perspective, higher cumulative rates of fertility prior to a given period of

observation may be among the strongest inducements to higher Total Fertility Rates for that period of observation. Within the context of the multiple regression model, as when the zero order coefficients were considered, mean marital parity was the strongest single predictor of Total Fertility Rates by Standard Metropolitan Statistical Areas.

Although cross-sectional hypothesis 33 predicted positive relationships, mean parity standardized relative income affluence varied in the direction of its effect on age specific fertility rates. Positive relationships were obtained only for age groups 15 to 19, 25 to 29, and 45 to 49 and with regard to prediction of the Total Fertility Rate. None of the obtained positive beta weights were found to be statistically significant. However, the negative relationship of mean parity standardized relative income affluence to the fertility rate which obtained for age group 30 to 34 was found to be statistically significant.

Testing of hypotheses 36, dealing with the third order relationship in light of the multiple regression models, produced similar results as when the zero order Pearsonian  $r$  coefficients were considered. Changes in the magnitudes of the signed  $F$ -ratios of the relationships of mean parity standardized relative income affluence and rates of fertility were too inconsistent to produce a statistically significant Spearman's  $Rho$  coefficient.

Table 28 provides data regarding the total proportion of variance explained by the various multiple regression models of age specific fertility rates. It is observed that the set of independent variables provided even less accuracy in prediction when applied to

TABLE 28. PROPORTION VARIANCE IN FERTILITY RATES EXPLAINED BY  
MULTIPLE REGRESSIONS, BY AGE GROUP OF WIVES<sup>a</sup>

Age Group of Wives	Multiple R	Proportion Variance Explained Multiple R <sup>2</sup>	F-ratio Multiple Regression
15-19	.494	.244	1.566
20-24	.374	.140	.791
25-29	.373	.139	.786
30-34	.531	.282	1.910
35-39	.332	.110	.600
40-44	.391	.153	.875
45-49	.396	.157	.903
15-49	.582	.345	2.562 <sup>b</sup>

<sup>a</sup>Regressions based on sample of 42 Standard Metropolitan Statistical  
Areas.

<sup>b</sup> $p \leq .05$ .

to fertility than when applied to female labor force participation rates. This generalization fits all except youngest and oldest age groups. However, accuracy of predictions of the Total Fertility Rates and the summed rates of labor force participation are comparable when all age levels are simultaneously considered.

Table 28 also provides information regarding the degree of improvement in prediction obtained by consideration of all the independent variables over that provided solely by the independent variable with the highest zero order correlation with the respective fertility rates. For age group 15 to 19, consideration of the entire model improved prediction by 13.7 percent over that provided by consideration of the index of sexual income differentiation alone. For age group 20 to 25 the entire set of independent variables improved prediction 8.5 percent over that provided by mean relative income affluence alone. The strongest zero order predictor of fertility rates for age group 25 to 29, the Standard Measure of Differentiation, provided only 1.0 percent less accuracy of prediction than does consideration of all seven independent variables. Mean parity standardized relative income affluence, when considered alone, provided 13.6 percent less accuracy in prediction of the fertility rates of age group 30 to 34 than was obtained by consideration of the entire model. Consideration of all variables improved prediction of the fertility rate of age group 35 to 39 by 7.1 percent over that provided by consideration of mean parity standardized relative affluence alone. For prediction of fertility for age group 40 to 44, the complete multiple regression model provided a proportionate reduction in error of 11.8 percent greater than

that provided by consideration of the index of sexual income differentiation alone. Income of employed women, the strongest zero order predictor of fertility for age group 45 to 49, provided 5.8 percent less accuracy in prediction than did simultaneous consideration of all seven independent variables. In considering prediction of the Total Fertility Rates, the multiple regression improves prediction 16.7 percent over the level provided by the strongest zero order predictor in the model, mean marital parity.

In comparing the findings regarding the two main sets of hypotheses, fewer of the fertility relationships observed were of sufficient strength to be considered statistically significant with a probability less than or equal to .05. In the prediction of Total Fertility Rates, only three independent variables produced statistically significant zero order Pearsonian  $r$  correlations: the index of sexual income differentiation, mean marital parity, and mean parity standardized relative income affluence. Of these, correlations of the latter two variables indicated relationships to fertility opposite in direction to those predicted.

Within the context of the multiple regression model, the index of sexual income differentiation was also found to be uniquely responsible for reduction of a significant proportion of error in prediction of Total Fertility Rates, as was mean marital parity. However, in contrast to the predicted relationship, the relationship of mean marital parity to Total Fertility Rates was such that higher mean parity levels are associated with higher fertility rates.

Leaving the question of significance aside, it should be observed that within the context of the multiple regression models, the index of sexual income differentiation was the most important predictor of fertility rates for age groups 15 to 19, 20 to 24, and 40 to 44. The mean income of employed women, by contrast, was the most important predictor only for the eldest age group. The Standard Measure of Differentiation, as an index of the degree of occupational sexual segregation, was the most important predictor only with regard to age groups 25 to 29 and 35 to 39, and of these only the F-ratio for age group 25 to 29 is statistically significant. For age group 30 to 34, mean parity standardized relative income affluence was found to be the most important and the only statistically significant predictor of the fertility rate.

It may be suggested that programs designed to improve the economic status of women might have the effect of lowering fertility in the two youngest age groups. Such programs might be more influential if emphasis was placed on sexual economic equality, rather than simply increases in women's incomes. Programs designed to reduce occupational sexual segregation might be expected to be primarily influential on wives age 25 to 29. However, with regard to prediction of Total Fertility Rates involving the entire sample, significant contributions to prediction are made only by the index of sexual income differentiation and by mean marital parity. It is possible that among wives in the younger age groups, rational economic decisions based on the relative contribution of the wife to the family income rather than her absolute contribution may be more influential

on decisions leading to lower fertility and/or postponed childbearing. Furthermore, once childbearing has begun, it may be that the decision to bear additional children is more readily accepted. Particularly among older women, the positive effect of prior childbearing may offset the negative effect of sexual economic equality on probability of childbearing.

Such comments go well beyond the present analyses of the data, and are more appropriately presented in the following chapter which is devoted to synthesis of the findings, as well as recommendations for further research.

## CHAPTER 8

### SUMMARY AND CONCLUSIONS

The preceding chapters have considered in substantial detail longitudinal and cross-sectional relationships of dimensions of the structural conditions of female employment to probabilities of female participation in the labor force and childbearing. In cross-sectional perspective, the relationship of aggregate indices of family situation factors to these dependent variables were also investigated. In the present chapter an attempt will be made to synthesize the longitudinal and cross-sectional statistical findings, so as to assess their implications with regard to population policy recommendations and future policy oriented research. Empirical findings bearing on the presumed relationship of female participation in the labor force and fertility will again be reviewed and structural conditions associated with variations in relative frequencies of these forms of behavior will be suggested.

Central to the present research has been the proposition and assumption that there exists a negative relationship between female participation in the labor force and fertility. As observed in Chapters 2 and 3, much research considering differential fertility of employed versus unemployed women has supported this assumption, although to date little research has been carried out regarding the relationships between aggregate rates of these phenomena. Assumptions

based on research carried out with the individual woman or her family as the unit of analysis may be applied to predictions of aggregate relationships only at the risk of ecological and atomistic fallacies. In the present case, the empirical counterpart of such "error" in theoretical reasoning is demonstrated by low cross-sectional correlation coefficients between rates of female participation in the labor force and fertility. While the directions of the obtained relationships were negative, as was expected, the correlation coefficients were much lower than had been anticipated. When the summed labor force participation rates and Total Fertility Rates were compared, the relationship declined to approximately zero. Higher correlation coefficients were obtained when computations were made for each five year age group.

These findings hold at least two implications. Variations in the strengths of the relationships of female participation in the labor force and fertility by age group suggest that at different age levels women may be differentially affected by factors influential on decisions regarding work and childbearing. In light of the reduced cross-sectional correlations, a second implication is that the extent of ecological error may have been greater than anticipated. Low correlations of fertility rates and female labor force participation rates result from underestimation of the proportion of women who both worked and gave birth during a given period of observation, and the proportion of women who refrained from both types of activities. In an effort to build combinations of these forms of behavior into empirical models of female labor force participation and fertility,

consideration was given to an index of the prevalence of female sex typed secondary careers, and to three family situation factors. While data were available for evaluation of the possible longitudinal and cross-sectional effects of the prevalence of female sex typed secondary careers, only cross-sectional data were available for the study of the familial situation indices.

The present research findings provide conflicting results with reference to the arguments, presented by such researchers as Judith Blake (1965) and Kingsley Davis (1967), that sexual equality of occupational opportunities would serve to increase female participation in the labor force and reduce fertility. In longitudinal perspective, occupational sexual segregation tended to be inversely associated with the trends of female labor force participation rates for women under 20 years of age. Among such women, occupational sexual segregation may act as a deterrent to early entry to the labor force. However, trends of occupational sexual segregation in the United States from 1930 to 1970 were also inversely associated with fertility among women of all age levels. As segregation increased, the probability of a woman giving birth tended to decrease. This may be a spurious relationship, however, as, over the period of observation, salaries of both sexes increased and bureaucracy expanded (Stein, 1960), as did the extent of white collar employment. Furthermore, under conditions of stability, the effect of occupational sexual segregation on rates of fertility and labor force participation may be of only short term duration. This is evidenced by the low cross-sectional correlations of the Standard Measure of Differentiation to rates of

fertility and female labor force participation. However, this conclusion rests on the assumption that in cross-sectional perspective the effects of longitudinal changes, per se, are held constant, while independent, dependent, spurious, and other types of variables influential on the relationships are permitted to fluctuate.

Occupational equality also appears to act as an inducement to fertility among women age 25 and over. This effect, however, is very slight, and may be indicative of broader conditions of female employment which may encourage postponement of childbearing during earlier childbearing years. However, such conclusions go beyond the present data, and are better offered as broad recommendations for future research.

Longitudinal and cross-sectional findings conflict regarding the effects of the incomes of employed women, both absolute and relative to those of men. Strong longitudinal correlations of absolute incomes of employed women with rates of fertility and female labor force participation and markedly reduced cross-sectional correlations suggest that the effect of the absolute income level may be of short term duration. This conclusion also rests on the assumption that in cross-sectional perspective the effects of longitudinal changes are statistically constant (i.e. randomized), while variables otherwise relevant to the model may change. Increases in absolute salaries of employed women are, therefore, suggested as short term deterrents to high fertility rates and as inducements to participation in the labor force among women of all age levels.

In contrast, evidence suggests that equality of income rewards by sex under conditions of stability may serve as a long term deterrent to increased fertility and population growth, and as a long term inducement to higher rates of female participation in the labor force. Although the directions of longitudinal relationships of median income ratios to rates of female labor force participation and fertility were opposite from expectations, the findings may reflect the more rapid increases in male salaries which occurred simultaneously with observed increases in female salaries. In cross-sectional perspective the hypotheses were supported. The index of sexual income differentiation was found to be significantly associated with both reduced Total Fertility Rates and increased summed labor force participation rates of wives. Although many of the age specific relationships were not found to be significant, present evidence would suggest that population policy programs oriented to reduction of population growth rates should investigate procedures by which female salaries may be increased, while rate of increase in male salaries are reduced such that sexual economic equality may be achieved.

The goal of economic equality may be more important to reduced rates of population growth than either occupational equality, or simply increased absolute income levels. As the index of sexual income differentiation was found to be significantly associated with reduced fertility for age group 15 to 19 sexual economic equality may be expected to be a particularly effective factor in reducing population growth through encouragement of postponed childbearing, as well as through its influence on Total Fertility Rates. It may be

that the achievement of sexual equality represents a major adjustment toward a social structure conducive to long term levels of fertility and stationary populations.

Of the family situation factors considered cross-sectionally, prior fertility of wives, mean marital parity, was found to be the strongest single predictor of fertility. The positive relationships suggest the possibility that fertility rates may be characterized by serial correlation. The higher fertility rates have been in the past, the more probable it may be that high fertility will obtain during the period of observation. This statement must be recognized as applying at the aggregate level, and should not be interpreted as implying that the more children a woman has had, the more probable it is that she will have additional children. Theoretically one might suggest that social norms encouraging fertility during an earlier period may be carried forward as younger women follow the example set by older women. One method of testing such a proposition would be to compare rates of fertility among women in the younger age levels with rates of cumulative fertility among women in older age categories by Standard Metropolitan Statistical Areas. Such work would be of particular theoretical importance to the sociologist as an example of inertia as a social force.

Although the present study has produced few statistically significant findings, the researcher is not prepared to abandon structurally based explanations of variations in rates of fertility and female labor force participation. However, alternative theoretical perspectives suggest important factors which should be considered in

future applications of the basic model proposed in Chapter 1. Cultural supports theories may suggest, for example, the need to consider ethnic and religious differences in explanations of trends and variations in fertility and female labor force participation rates. While it is to be expected that consideration of such factors would improve the predictive potential of the proposed model, the low levels of prediction obtained in the present study may reflect inadequacies of data and operationalization.

The search should be continued for longitudinal data to supplement the present observations of the case of the United States for the period 1930 through 1970. Conclusions regarding longitudinal effects of variations in the structural conditions of female employment on rates of fertility and female participation in the labor force will remain uncertain until more adequate data are obtained. If more consistent and complete longitudinal data were obtained, analyses could be carried out with corrections for serial correlation. Such corrections would permit simultaneous controls of independent variables in longitudinal perspective in order to ascertain the accuracy of explanations of the presently conflicting longitudinal and cross-sectional results. Causal and path modeling would also become possible. These would allow more accurate determination of the processes by which structural conditions influence probabilities of childbearing and female labor force participation, as well as simulations for evaluations of proposed recommendations.

Further research is also necessary to the development of more adequate operational definitions and indicators of structural conditions

of female employment and the family situation factors considered in the present study. The low correlations observed regarding the effects of occupational sexual segregation on rates of fertility and female labor force participation may have resulted from the vague nature of the major census occupational categories to which the Standard Measure of Differentiation and the index of sexual income differentiation were applied. At various points in preceding chapters, it has been observed that statistical analyses considering the major census occupational categories remained sensitive to between group variations, but were insensitive to within group variations. The major census occupational categories violate both situs and status distinctions, particularly distinctions regarding economic and educational considerations. Future research should, therefore, consider the effects of variations in these indices when these are applied to a more adequate and detailed system of classification. One possibility would be redesigning the methods of calculation of these indices in order that they may be applied to the specific occupational titles and codes underlying the major census categories, as was carried out by Gross (1968). A second possibility would be to consider an intermediary occupational classification scheme designed to provide meaningful categorization with minimal violations of situs and status considerations. Such a classification scheme has been suggested by Marshall and Gorman (1975).

Related to this problem is the need to consider in greater detail the intrinsic nature of work available to women and its effect on decisions regarding labor force participation and childbearing. The present research has assumed a model such that equality in

percentage distributions of employed workers by sex among occupational categories was viewed as optimally affecting rates of fertility and female labor force participation. This assumption should be brought under more careful scrutiny. As many forms of available employment may be undesirable to both men and women, their availability to women might not be expected to reduce the probability of childbearing. Future research should, therefore, make more explicit the effect of intrinsic characteristics of available occupational roles on the relative desirability of motherhood and employment. Such factors as power, work autonomy, innovation, routinization, organizational setting, and physical environment may be as important as considerations of sexual equality of economic rewards and distributions among roles.

Related to this problem is the problem of operationalization of the index of the prevalence of female sex typed secondary careers. The lack of significant findings regarding the application of this concept in the present study may reflect the inadequacy of the measure as calculated. In the present study the proportion of all employed workers, male and female, engaged in clerical, sales, service, and farming occupations, was used as an index of such secondary career occupational roles. Further research should attempt to more accurately specify precisely what observable characteristics of an occupational position may minimize conflict between mother and worker roles. Specification of such characteristics alone would serve as a significant contribution to the sociology of occupations, and would facilitate the construction of more adequate indices of the availability of such secondary careers. The accuracy in prediction of the

suggested models of female labor force participation and fertility would thus be enhanced.

Finally, it will be remembered that while the present research endeavor was carried out at the aggregate level, at several points theoretical development oriented to individual women and their families was carried out. Theoretical propositions 18 through 27 regarding the effects of family situation factors on childbearing and work decisions should be operationalized and statistically evaluated with respect to individual wives. These propositions may be considered utilizing the data available in the public use sample sub-files constructed for the present project. The findings of such a study would be of considerable value to the determination of the veracity of related propositions represented in the aggregate model.

It is hoped that the present work has at least clarified certain theoretical and empirical questions involved in ascertaining the relationships of social structural conditions to probabilities of female labor force participation and childbearing. Longitudinal and cross-sectional data which have been gathered and organized may facilitate further research into the dynamics underlying these forms of behavior. The findings of the present study, based on consideration of both cross-sectional correlations and longitudinal trends, have led to policy recommendations with regard to structural changes involving sexual economic equality. Hopefully, new insight has been gained as to the complexity of questions regarding the effects of occupational opportunities available to women on acceptance or rejection of the childbearing role.

## REFERENCES

- Astin, Helen S.  
 1969 The Woman Doctorate in America: Origins, Career, and Family.  
 New York: Russell Sage Foundation.
- Bancroft, Gertrude  
 1958 The American Labor Force: Its Growth and Changing Composition.  
 New York: John Wiley and Sons, Inc.
- Bankes, Joseph A.  
 1954 Prosperity and Parenthood. London: Routledge and Keagan Paul.
- Becker, Gary  
 1960 "An Economic Analysis of Fertility." in National Bureau of  
 Economic Research, Demographic and Economic Change in Developed  
 Countries. Princeton: Princeton University Press.
- 1965 "A Theory of Allocation of Time." Economic Journal 75  
 (September:493-517.
- Ben-Porath, Yorham  
 1973 "Economic Analysis of Fertility in Israel: Point and Counter-  
 point." Journal of Political Economy 81, Part II (March/April:  
 S202-S233.
- Blake, Judith  
 1965 "Demographic Science and the Redirection of Population Policy."  
 Pp. 41-69 in M.C. Sheps and U.C. Ridley (eds.), Public Health  
 and Population Change. Pittsburg: University of Pittsburg  
 Press.
- 1966 "The Americanization of Catholic Reproductive Ideals."  
 Population Studies 20 (July):27-43.
- 1967 "Family Size in the 1960's - A Baffling Fad?" Eugenics  
 Quarterly 14 (March):60-74.
- Blalock, Hubert M., Jr.  
 1972 Social Statistics, Second Edition. New York: McGraw-Hill  
 Book Company.
- Blau, Peter M., and Otis Dudley Duncan  
 1967 The American Occupational Structure. New York: John Wiley and  
 Sons, Inc.

- Blood, Robert O., and Robert L. Hamblin  
 1958 "The Effect of the Wife's Employment on the Family Power Structure." *Social Forces* 36 (May):347-352.
- Cain, Glen G., and Adriana Weininger  
 1972 *Economic Determinants of Fertility*. mimeographed. Madison, Wisconsin: University of Wisconsin.
- Cho, Lee-Jay  
 1970a "Employment Status and Occupation." Pp. 176-243 in Lee-Jay Cho, Wilson H. Grabill, and Donald J. Bogue, *Differential Current Fertility in the United States*. Chicago: Community and Family Study Center, University of Chicago.  
 1970b "Income and Fertility." Pp. 244-286 in Lee Jay Cho, Wilson H. Grabill, and Donald J. Bogue, *Differential Current Fertility in the United States*. Chicago: Community and Family Study Center, University of Chicago.
- Clare, Jean E.  
 1957 "The Relationship of Non-Familial Activities to Fertility Behavior." unpublished Ph.D. Dissertation. Ann Arbor: University of Michigan.
- Coser, Rose Laub, and Gerlad Rokoff  
 1971 "Women in the Occupational World: Social Disruption and Conflict." *Social Problems* 18 (Spring):535-554.
- Dahlstrom, Edmund  
 1971 "Analysis of the Debate on Sex Roles." Pp. 170-205 in Edmund Dahlstrom (ed.), *The Changing Roles of Men and Women*. Boston: Beacon Press.
- Dahlstrom, Edmund, and Rita Liljestrom  
 1971 "The Family and Married Women at Work." Pp. 19-58 in Edmund Dahlstrom (ed.), *The Changing Roles of Men and Women*. Boston: Beacon Press.
- Davis, Kingsley  
 n.d. "The Demographic Transition." *The Voice of America Forum Lectures, Behavior Science Series* 17 (n.d.):3-12.  
 1967 "Population Policy: Will Current Programmes Succeed?" *Science* 158 (November 10):730-739.
- Davis, Kingsley, and Judith Blake  
 1950 "Social Structure and Fertility: An Analytic Framework." *Economic Development and Cultural Change* 4 (April):217-235.

- Davtyan, L.M.  
1967 "The Influence of Socioeconomic Factors on Natality (as Exemplified in the Armenian Soviet Socialist Republic)." Pp. 73-77 in United Nations Department of Economic and Social and Social Affairs, World Population Conference, 1965, II. New York: United Nations.
- DeTray, Dennis N.  
1973 "Child Quality and the Demand for Children." Journal of Political Economy 81, Part II (March/April):S70-S95.
- Easterlin, Richard A.  
1966 "On the Relation of Economic Factors to Recent and Projected Fertility Changes." Demography 3:131-153.  
1969 "Towards a Socioeconomic Theory of Fertility: A Survey of Recent Research on Economic Factors in American Fertility." Pp. 127-156 in S.J. Behrman, et al. Fertility and Family Planning, A World View. Ann Arbor: The University of Michigan Press.  
1971 "Does Human Fertility Adjust to the Environment?" The American Economic Review 56 (May):399-407.
- Empey, Lamar  
1958 "Role Expectations of Young Women Regarding Marriage and Career." Marriage and Family Living 20 (May):152-155.
- Epstein, Cynthia  
1970a Woman's Place. Berkeley: University of California Press.  
1970b "Encountering the Male Establishment: Sex Status Limits on Women's Careers in the Professions." American Journal of Sociology 75 (May):965-982.
- Fereric, N.  
1968 "The Influence of Women's Employment of Fertility." Pp. 77-82 in E. Szabady (ed.), World Views on Population Problems. Budapest: Akademiai Kiado.
- Freedman, Deborah  
1963 "The Relation of Economic Status to Fertility." American Economic Review 53 (June):414-426.
- Freedman, Ronald  
1967 "Applications of the Behavioral Sciences to Family Planning Programs." Studies in Family Planning 23 (October):5-9.
- Freedman, Ronald, Gerhard Baumert, and Martin Bolte  
1959 "Expected Family Size and Family Size Values in West Germany." Population Studies 13 (November):136-150.

- Freedman, Ronald, David Goldberg, and Harry Sharp  
 1955 "Ideals About Family Size in the Metropolitan Area: 1954." Milbank Memorial Fund Quarterly 33 (April):187-197.
- Gardner, Bruce  
 1973 "Economics of the Size of North Carolina Rural Families." Journal of Political Economy 81, Part II, (March/April): S99-S122.
- Gibbs, Jack P.  
 1965 "Occupational Differentiation of Negroes and Whites in the United States." Social Forces 44 (December):150-165.
- Ginzberg, Eli  
 1968 "Paycheck and Apron - Revolution in Woman Power." Industrial Relations 7 (May):193-203.
- Glick, Paul C.  
 1957 American Families. New York: John Wiley and Sons, Inc.
- Goodman, Carolyn  
 1968 "A Study of Psychological Factors in Different Fertility and Family Planning Types." Dissertation Abstracts 28 (7-B): 3048.
- Goldberg, David  
 1967 "Some Observations on Recent Changes in American Fertility Based on Sample Survey Data." Eugenics Quarterly 14 (December):255-264.
- Goldstein, Sidney  
 1972 "The Influence of Labor Force and Education on Fertility in Thailand." Population Studies 26 (November):419-436.
- Gordon, Margaret  
 1968 "Introduction: Women in the Labor Force." Industrial Relations 7 (May):187-192.
- Gross, Edward  
 1968 "Plus Ça Change...? The Sexual Structure of Occupations Over Time." Social Problems 16 (Fall):198-208.
- Hall, Richard H.  
 1969 "Occupations and the Social Structure. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Hammons, Helen  
 1957 "Eugenic Trends at Mid-Century." Eugenics Quarterly 4 (December):219-222.

Havens, Elizabeth

- 1972 "The Relationship Between Female Participation in the Labor Force and Fertility Rates." presented at the Annual Meeting of the American Sociological Association, New Orleans.

Havens, Elizabeth, and Jack P. Gibbs

- 1975 "The Relation Between Female Labor Force Participation and Fertility, A Theory of Variability." *Sociological Methods and Research* 3 (February):258-290.

Heer, David M., and John W. Boynton

- 1970 "A Multivariate Regression Analysis of Differences in Fertility of United States Counties." *Social Biology* 17 (September): 180-194.

Hill, Reuben

- 1970 *Family Development in Three Generations*. Cambridge, Mass.: Schenkman Publishing Co., Inc.

Hoffman, Lois W.

- 1963 "The Decision to Work." Pp. 18-39 in F. Ivan Nye, and Lois W. Hoffman, *The Employed Mother in America*. Chicago: Rand McNally.

Holmstrom, Lynda

- 1972 *The Two Career Family*. Cambridge, Mass.: Schenkman Publishing Company.

Keller, Suzanne

- 1972 "The Future Status of Women in America." Pp. 267-287 in Charles F. Westoff and Robert Parke, Jr. (eds.), *Commission on Population Growth and the American Future, Research Reports, Volume 1, Demographic and Social Aspects of Population Growth*. Washington, D.C.: U.S. Government Printing Office.

Kerlinger, N. and Ecazar J. Pedhazur

- 1973 *Multiple Regression in Behavioral Research*. New York: Holt, Rinehard and Winston, Inc.

Kiser, Clyde V.

- 1958 "Is the Large Family Coming Back." *Child Study* 35 (Fall):23-25.
- 1959 "Current Mating and Fertility Patterns and Their Demographic Significance." *Eugenics Quarterly* 6 (June):65-83.

Kiser, Clyde, Wilson H. Grabill, and Arthur A. Campbell

- 1968 *Trends and Variations in Fertility in the United States*. Cambridge: Harvard University Press.

- Knudsen, Dean D.  
1969 "The Declining Status of Women: Popular Myths and the Failure of Functionalist Thought." *Social Forces* 48 (December): 183-193.
- Kohn, Melvin L.  
1969 *Class and Conformity, A Study in Values*. Homewood, Illinois: The Dorsey Press.
- Kupinsky, S.  
1971 "NonFamilial Activity and Socio-economic Differentials in Fertility." *Demography* (August): 353-367.
- Leopold, Alice K.  
1958 "The Family Woman's Expanding Role." *Marriage and Family Living* 20 (August):278-282.
- Marshall, Kimball P., and Benjamin L. Gorman.  
1975 "Occupational Prestige From Preference Orientations via the Markov Chain: An Alternative to Respondent Ranking Techniques." *Social Science Research* 4 (March):41-64.
- Mazur, Peter  
1968 "Birth Control and Regional Differentials in the Soviet Union." *Population Studies* 22 (November):319-33.
- Mincer, Jacob  
1963 "Market Prices, Opportunity Costs, and Income Effects." Pp. 67-82 in C. Chirst (ed.), *Measurement in Economics: Studies in the Mathematical Economics and Econometrics in Memory of Yehuda Grunfeld*. Stanford: Stanford University Press.
- Michel, Andre  
1971 "Roles Masculine et Feminine Dans La Famille: Examen De La Theorie Classique." *Social Science Information* 10 (February): 113-135.
- Musham, H.V., and Clyde V. Kiser  
1956 "Social and Psychological Factors Affecting Fertility: XXXII The Number of Children Desired at Time of Marriage." *Milbank Memorial Fund Quarterly* 34 (July):287-312.
- Nye, F. Ivan, and Lois W. Hoffman  
1963 "Why They Work." Pp. 5-17 in Ivan F. Nye and Lois W. Hoffman, (eds.) *The Employed Mother in America*. Chicago: Rand McNally and Company.
- Parsons, Talcott  
1949 "The Social Structure of the Family." Pp. 183-195 in Ruth N. Anshen (ed.), *The Family: Its Function and Destiny*. New York: Harper.

- 1954 "The Kinship System of the Contemporary United States." Pp. 177-196 in *Essays in Sociological Theory*, rev. ed. New York: The Free Press.
- Parsons, Talcott, and Robert F. Bales  
1955 *Family Socialization and Interaction Process*. Glencoe, Ill.: Free Press.
- Preston, Samuel H.  
1972 "Marital Fertility and Female Employment Opportunity: United States, 1960." mimeographed. Berkeley: University of California.
- Rainwater, Lee  
1964 "Marital Sexuality in Four Cultures of Poverty." *Journal of Marriage and the Family* 26 (November):457-466.
- Rodman, Hyman  
1965 "Talcott Parsons' View of the Changing American Family." Pp. 262-286 in Hyman Rodman (ed.), *Marriage, Family, and Society: A Reader*. New York: Random House.
- Rossi, Alice  
1965 "Women in Science: Why So Few?" *Science* 148 (May):1196-1202.
- Ryder, Norman B.  
1969 "The Emergence of a Modern Fertility Pattern: United States 1917-1966." Pp. 99-123 in S.J. Behrman, Leslie Corsa, Jr., and Ronald Freedman (eds.), *Fertility and Family Planning, A World View*. Ann Arbor: University of Michigan Press.
- Sadvokasova, E.A.  
1967 "Birth Control Measures and Their Influence on Population Replacement." Pp. 110-114 in *United Nations Department of Economic and Social Affairs, World Population Conference, 1965, II*. New York: United Nations.
- Sanderson, Warren and Robert J. Willis  
1971 "Economic Models of Fertility: Some Examples and Implications." Pp. 32-42 in *National Bureau of Economic Research, Annual Report*. New York: National Bureau of Economic Research, Inc.
- Simon, Julian  
1974 *The Effects of Income on Fertility*. Chapel Hill, N.C.: Carolina Population Center.
- Stein, Maurice  
1960 *The Eclipse of Community*. Princeton: Princeton University Press.
- Stycos, J. Mayone  
1952 "Family and Fertility in Puerto Rico." *American Sociological Review* 17 (October):572-580.

- Stycos, J. Mayone, Jurt Back, and Reuben Hill  
 1956 "Problems of Communication Between Husbands and Wives on Matters Relating to Family Limitation." *Human Relations* 9:207-215.
- Stycos, J. Mayone, and Robert H. Weller  
 1967 "Female Working Roles and Fertility." *Demography* 4:210-217.
- Szabady, E.  
 1968 "Basic Fertility Tables for Some East-European Socialist Countries." Pp. 387-408 in E. Szabady (ed.), *World Views of Population Problems*. Budapest: Akademiai Kaido.
- Tarver, James D., Cathy Cyrus, Kenneth Kiser, Che Fu Lee, and Robert Morgan  
 1970 "Urban Influence on the Fertility and Employment Patterns of Women Living in Homogeneous Areas." *Journal of Marriage and the Family* 32 (May):237-241.
- Tien, Yuan H.  
 1970 "Marital Moratorium and Fertility Control in China." *Population Studies* 24 (November):311-323.
- Turner, Ralph H.  
 1964 "Some Aspects of Women's Ambitions." *American Journal of Sociology* 70 (November):271-285.
- United Nations, Department of Economic and Social Affairs  
 1973 *The Determinants and Consequences of Population Trends*. New York: United Nations.
- Urlanis, B.T.  
 1967 "Dynamics of the Birth Rate in the Union of Soviet Socialist Republics and Factors Contributing to it." Pp. 232-238 in United Nations Department of Economic and Social Affairs, *World Population Conference, 1965, II*. New York: United Nations.
- U.S. Bureau of the Census  
 1972 *Public Use Samples of Basic Records from the 1970 Census: Description and Technical Documentation*. Washington D.C.: U.S. Government Printing Office.
- U.S. Bureau of the Census  
 1974 *Statistical Abstract of the United States: 1974*. (95th edition) Washington, D.C.: U.S. Government Printing Office.
- Veevers, J.E.  
 1971 "Childlessness and Age at First Marriage." *Social Biology* 18 (September):292-295.
- Weber, Max  
 1946 *From Max Weber: Essays in Sociology*, Translated and Edited by H.H. Gerth and C. Wright Mills. New York: Oxford University Press.

- Weill, Mildred W.  
1961 "An Analysis of the Factors Influencing Married Women's Actual or Planned Work Participation." *American Sociological Review* 26 (February):91-96.
- Weller, Robert H.  
1968a "The Employment of Wives, Role Incompatibility, and Fertility, A study of Lower and Middle Class Residents of San Juan Puerto Rico." *Milbank Memorial Fund Quarterly* 46 (October): 507-526.  
1968b "The Employment of Wives, Dominance, and Fertility." Presented at the annual meeting of the American Sociological Association.
- Weller, Robert H., and James M. Sakoda  
1971 "A Longitudinal Study of Female Employment and Fertility in Puerto Rico, 1940-1960." Presented at the annual meeting of the Eastern Sociological Society, New York City.
- Whelpton, Pascal K.  
1954 "Future Fertility of American Women." *Eugenics Quarterly* 1 (March):4-15.
- Whelpton, Pascal K., Arthur A. Campbell, and John E. Patterson  
1966 *Fertility and Family Planning in the United States*. Princeton, New Jersey: Princeton University Press.
- Willis, Robert J.  
1973 "A New Approach to the Economic Theory of Fertility Behavior." *Journal of Political Economy* 81, Part II, (March-April):S14-S64.
- Wonnacott, Ronald J., and Thomas H. Wonnacott  
1970 *Econometrics*. New York: John Wiley and Sons, Inc.
- Woods, Frances Jerome  
1959 *The American Family System*. New York: Harper and Brothers.
- Yaukey, David  
1969 "On Theorizing About Fertility." *The American Sociologist* 4 (May):100-104.
- Yeracaris, Constantine A.  
1959 "Differentials in Ideal Family Size." *Sociology and Social Research* 44 (September-October):8-11.

APPENDIX

FIGURE A-1. FORMULA FOR COMPUTATION OF THE STANDARD MEASURE OF DIFFERENTIATION

$$\text{Standard Measure of Differentiation} = \frac{\sum_{i=1}^J \left( \frac{F_i}{F_i + M_i} \right)^2 + \sum_{i=1}^J \left( \frac{M_i}{F_i + M_i} \right)^2}{2} \times 100$$

- M<sub>i</sub>. Number of male workers in occupational category i.
- F<sub>i</sub>. Number of female workers in occupational category i.
- J. Total number of occupational categories

FIGURE A-2. FORMULA FOR COMPUTATION OF THE INDEX OF THE PREVALENCE OF FEMALE SEX TYPED SECONDARY CAREERS.

$$\text{Prevalence of Female Sex Typed Secondary Careers} = \frac{\text{Nclerical} + \text{Nsales} + \text{Nservice} + \text{Nfarm owners and managers} + \text{Nfarm laborers}}{\text{Total Employed Workers}} \times 100$$

N. Number of all workers of both sexes employed in the respective occupational categories.

FIGURE A-3. FORMULA FOR THE COMPUTATION OF THE INDEX OF STANDARD INCOME CHANGE.

$$\text{Standard Income Change} = \frac{\text{Income}_t - \text{Income}_{t-1}}{\text{Income}_{t-1}} \times 100$$

t. year of observation

FIGURE A-4. FORMULA FOR THE COMPUTATION OF THE MEDIAN INCOME RATIO.

$$\text{Median Income Ratio} = \frac{\text{Median Income from Occupation Full Time Full Year Employed Females}}{\text{Median Income from Occupation Full Time Full Year Employed Males}}$$

FIGURE A-5. FORMULA FOR THE COMPUTATION OF THE INDEX OF SEXUAL INCOME DIFFERENTIATION.

$$\text{Sexual Income Differentiation} = \frac{\sum (F_i \cdot N_i)}{\sum (M_i \cdot N_i)} \times 100$$

- Mi. Mean income from occupation for male workers in occupation i.
- Fi. Mean income from occupation for female workers in occupation i.
- Ni. Proportion of employed women in occupational category i, of all employed women.
  - i. occupational category for which Mi, Pi, and Ni could each be calculated.

FIGURE A-6. FORMULA FOR THE COMPUTATION OF MEAN RELATIVE INCOME AFFLUENCE.

$$\text{Mean Relative Income Affluence} = \frac{\sum_{i=1}^K \sum_{h=1}^J \text{Income}_{hi} \times 100}{\text{Referrent}} \times 100 \quad \text{Total Number of Families}$$

Income. Total income of husband located in occupational category 1.

h. Refers to an individual family.

i. Occupational category.

Referrent. Mean total income of husbands in occupational category i, who are 35 to 44 years of age.

J. Total number of occupational categories for which referrent could be calculated.

K. Total number of families.

FIGURE A-7. FORMULA FOR THE COMPUTATION OF MEAN MARITAL PARITY.

$$\text{Mean Marital Parity} = \frac{\sum_{h=1}^K \left( \begin{array}{l} \text{Number of Children} \\ \text{Ever Born to Wife}_h \end{array} \right) - \left( \begin{array}{l} \text{Number of Children} \\ \text{Under One Year of Age}_h \end{array} \right)}{\text{Total Number of Families}}$$

h. Refers to individual family.

k. Total number of families.

FIGURE A-8. FORMULA FOR THE COMPUTATION OF MEAN PARITY STANDARDIZED RELATIVE INCOME AFFLUENCE.

$$\text{Mean Parity Standardized Relative Income Affluence} = \frac{\sum_{i=1}^K \sum_{h=1}^J \left[ \frac{\text{Income}_h \times 100}{\text{Referent}_i} \right] \left[ \frac{\text{Number of Children (Even Born to Wife}_h - \text{Number of Children Under Year of } + 2)}{\text{Age}_h} \right]}{\text{Total Number of Families}} \times 100$$

Income. Total income of husband located in occupational category i.

h. Refers to an individual family.

i. Occupational category.

Referent. Mean total income of husbands in occupational category i, who are 35 to 44 years of age.

J. Total number of occupational categories in which referent could be calculated.

K. Total number of families.

TABLE A-1. LONGITUDINAL TRENDS IN THE EXPANSION OF THE FEMALE LABOR FORCE IN THE UNITED STATES, 1930 THROUGH 1970<sup>a</sup>.

Year	Number of Women in Labor Force	Percentage Women Comprised of All Workers	Labor Force Participation Rate, All Women
1930	10679048	22.00	24.30
1940	13840000	25.40	27.40
1944	16480000	34.60	N.A.
1945	19570000	36.10	36.80
1947	16664000	28.08	31.80
1948	17334992	28.60	32.70
1949	17788000	29.02	33.20
1950	18388992	29.60	33.90
1951	19016000	30.67	34.70
1952	19268992	31.01	34.80
1953	19382000	30.76	34.50
1954	19678000	30.92	34.60
1955	20548000	31.60	35.70
1956	21460992	32.25	36.90
1957	11732000	32.47	36.90
1958	22118000	32.70	37.10
1959	22482992	32.88	37.20
1960	23240000	33.38	37.80
1961	23806000	33.79	38.10
1962	14014000	34.01	38.00
1963	24704000	34.39	38.30
1964	25412000	34.77	38.70
1965	26200000	35.19	39.30
1966	27298992	36.03	40.30
1967	28360000	36.67	41.10
1968	29204000	37.09	41.60
1969	30512000	37.79	42.70
1970	31520000	38.11	43.40

<sup>a</sup>Sources follow Tables A-1 through A-5.

N.A. Not available.

TABLE A-2. LONGITUDINAL TRENDS IN AGE SPECIFIC FEMALE LABOR FORCE PARTICIPATION RATES IN THE UNITED STATES, 1930 THROUGH 1970<sup>a</sup>.

Year	Age Below 18	Age 18-19	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65 and Over
1930	N.A.	22.80 <sup>b</sup>	41.80	N.A.	24.60 <sup>c</sup>	N.A.	18.00 <sup>d</sup>	7.30
1940	8.00	43.00	58.00	36.00	29.00	24.00	18.00	7.00
1945	26.00	67.00	55.00	40.00	41.00	37.00	27.00	10.00
1947	29.50	52.30	44.90	32.00	36.30	32.70	24.30	8.10
1948	31.40	52.10	45.30	33.20	36.90	35.00	24.30	9.10
1949	31.20	53.00	45.00	33.50	38.10	35.90	25.30	9.60
1950	30.10	51.30	46.10	34.00	39.10	38.00	27.00	9.70
1951	32.20	52.70	46.60	35.40	39.80	39.70	27.60	8.90
1952	33.40	51.40	44.80	35.50	40.50	40.10	28.70	9.10
1953	31.00	50.80	44.50	34.10	41.30	40.40	29.10	10.00
1954	28.70	50.50	45.30	34.50	41.30	41.20	30.10	9.30
1955	28.90	51.00	46.00	34.90	41.60	43.80	32.50	10.60
1956	32.80	52.10	46.40	35.40	43.10	45.50	34.90	10.90
1957	31.10	51.50	46.00	35.60	43.30	46.50	34.50	10.50
1958	18.10	51.00	46.40	35.60	43.40	47.90	35.20	10.30
1959	28.80	49.10	45.20	35.40	43.40	49.00	36.60	10.20
1960	21.10	51.10	46.20	36.00	43.50	49.80	37.20	10.80
1961	18.50	51.10	47.10	36.40	43.80	50.10	37.90	10.70

TABLE A-2 - CONTINUED.

Year	Age Below 28	Age 18-19	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65 and Over
1962	27.10	50.90	47.40	36.40	44.10	50.00	38.70	9.90
1963	27.10	50.60	47.60	37.20	44.90	50.60	39.70	9.60
1964	27.40	49.30	49.50	37.30	45.00	51.40	40.20	10.10
1965	27.70	49.40	50.00	38.60	46.10	50.90	41.10	10.00
1966	30.70	52.10	51.50	39.90	46.90	51.70	41.80	9.60
1967	31.00	52.30	53.40	41.90	48.10	51.80	2.40	9.60
1968	31.70	52.50	54.60	42.60	48.90	52.30	42.40	9.60
1969	33.70	53.50	56.80	43.80	49.90	53.80	43.10	9.90
1970	34.90	53.70	57.80	45.00	51.10	54.40	43.00	9.70

<sup>a</sup>Sources follows Tables A-1 through A-5.

<sup>b</sup>Refers to women below age 20.

<sup>c</sup>Refers to women age 25 to 44.

<sup>d</sup>Refers to women age 45 to 64.

N.A. Not available.

TABLE A-3. LONGITUDINAL TRENDS IN PERCENTAGE DISTRIBUTIONS OF THE TOTAL LABOR FORCE AMONG OCCUPATIONAL CATEGORIES, THE UNITED STATES, 1930-1970<sup>a</sup>.

Year	Professionals	Managers	Clerical	Sales	Craftspeople	Operatives	Laborers	Private Household Workers	Service Workers	Farmers and Farm Managers	Farm Laborers and Farm Forepersons	Farmers and Farm Managers Laborers and Forepersons
1930	6.10	7.50 <sup>b</sup>	16.30	N.A.	12.90 <sup>c</sup>	16.40 <sup>d</sup>	12.90	6.90 <sup>e</sup>	N.A.	12.40	8.60	21.00
1940	7.48	8.32	10.41	6.44	11.34	18.44	6.76	4.85	7.29	N.A.	N.A.	18.67
1947	6.71	9.71	12.20	5.75	13.94	21.29	6.97	3.20	7.01	N.A.	N.A.	13.22
1949	6.78	10.51	12.04	6.19	14.01	19.99	7.21	3.07	7.37	N.A.	N.A.	12.82
1950	7.59	10.84	13.05	6.63	12.86	20.38	5.27	3.28	8.14	7.84	4.13	11.97
1952	8.65	10.18	13.54	6.21	13.55	20.03	7.11	2.97	7.73	N.A.	N.A.	9.99
1954	9.28	9.79	12.81	6.48	14.58	20.11	5.80	2.97	8.44	N.A.	N.A.	9.74
1958	11.31	10.70	14.65	6.65	11.88	17.60	5.67	3.78	8.89	5.10	N.A.	8.58
1960	11.01	10.75	14.38	6.50	13.26	18.31	5.60	3.00	8.90	4.69	3.58	8.27
1960	11.35	10.29	14.50	6.70	11.99	18.16	6.42	3.31	9.34	4.61	3.32	7.93
1962	11.92	11.48	15.10	6.48	11.95	17.62	5.60	3.48	9.34	4.11	2.91	7.02
1965	12.53	10.54	15.65	6.53	12.89	18.62	5.11	2.93	9.86	3.29	2.55	5.84
1965	12.61	10.17	16.23	6.23	13.16	19.01	4.87	2.64	10.05	2.88	2.18	5.06
1967	13.30	10.09	16.62	6.11	13.21	18.66	4.74	2.41	10.14	2.63	2.15	4.78
1968	13.75	10.11	16.88	6.32	12.43	18.23	4.64	2.73	10.05	2.64	2.22	4.86
1969	13.82	10.23	17.18	6.02	13.18	18.46	4.68	2.09	10.12	2.36	1.86	4.22
1970	14.80	8.30	18.00	7.10	13.90	17.60	4.47	1.50	11.30	1.90	1.20	3.10

<sup>a</sup>Sources follow Tables A-1 through A-5.  
<sup>b</sup>The 1930 figure includes wholesale and retail dealers.  
<sup>c</sup>The 1930 figure refers to skilled workers and foremen.  
<sup>d</sup>The 1930 figure refers to semiskilled workers and foremen.  
<sup>e</sup>The 1930 figure refers to servant classes.  
 N.A. Not available

TABLE A-4. LONGITUDINAL TRENDS IN THE PERCENTAGE DISTRIBUTIONS OF EMPLOYED WOMEN AMONG OCCUPATIONAL CATEGORIES, THE UNITED STATES, 1930-1970<sup>a</sup>.

Year	Professionals	Managers	Clerical	Sales	Craftspeople	Operatives	Laborers	Private Household Workers	Service Workers	Farmers and Farm Managers	Farm Laborers and Forepersons	Farm Managers	Farm Laborers and Forepersons	Farmers and Farm Laborers and Forepersons
1930	13.60	2.20 <sup>b</sup>	28.80	N.A.	.80 <sup>c</sup>	23.70 <sup>d</sup>	1.50	21.60 <sup>c</sup>	N.A.	2.50	5.40	2.50	5.40	7.90
1940	13.20	3.80	21.20	7.00	.90	18.40	N.A.	17.60	11.30	N.A.	N.A.	N.A.	N.A.	5.80
1944	9.00	3.90	26.60	7.50	N.A.	N.A.	N.A.	9.50	10.00	N.A.	3.40	N.A.	N.A.	N.A.
1945	8.00	4.00	25.00	7.00	2.00	24.00	1.00	9.00	10.00	N.A.	N.A.	N.A.	N.A.	10.00
1947	10.00	5.00	26.00	8.00	1.00	22.00	1.00	11.00	10.00	N.A.	N.A.	N.A.	N.A.	6.00
1949	9.00	5.00	28.00	8.00	2.00	20.00	N.A.	10.00	12.00	N.A.	N.A.	N.A.	N.A.	6.00
1949	10.80	5.50	26.40	8.80	1.10	18.70	.40	10.30	12.60	1.50	3.90	1.50	3.90	5.40
1952	11.00	5.00	29.00	8.00	1.00	19.00	1.00	10.00	12.00	N.A.	N.A.	N.A.	N.A.	4.00
1954	12.00	5.00	28.00	7.00	1.00	19.00	1.00	10.00	13.00	N.A.	N.A.	N.A.	N.A.	4.00
1958	13.00	5.00	30.00	7.00	1.00	14.00	1.00	11.00	14.00	.60	4.20	.60	4.20	4.00
1959	12.05	5.06	29.90	7.87	1.02	15.42	.45	9.07	14.44	1.00	3.00	1.00	3.00	4.00
1960	13.00	5.00	30.00	8.00	1.00	15.00	.50	10.00	15.00	1.00	3.00	1.00	3.00	4.00
1962	13.00	5.00	31.00	7.00	1.00	14.80	N.A.	10.00	15.00	1.00	2.00	1.00	2.00	3.00
1965	13.50	4.50	31.50	7.60	1.10	14.80	.50	8.20	15.50	.60	2.20	.60	2.20	2.80
1966	13.42	4.47	32.63	7.23	.96	15.73	.43	7.19	15.57	.50	2.16	.50	2.16	2.66
1967	13.74	4.39	33.22	7.07	1.04	15.53	.45	6.48	15.79	.37	1.93	.37	1.93	2.30
1968	14.40	4.30	33.30	6.80	1.10	14.80	.40	7.20	15.60	.30	1.70	.30	1.70	2.00
1969	13.80	4.30	34.30	6.90	1.20	15.40	.50	5.50	16.10	.30	1.70	.30	1.70	2.00
1970	13.40	4.20	31.10	8.30	1.40	15.90	.90	8.30	14.80	.60	1.20	.60	1.20	1.80

<sup>a</sup>Sources follow Tables A-1 through A-5.

<sup>b</sup>The 1930 figure includes wholesale and retail dealers.

<sup>c</sup>The 1930 figure refers to skilled workers and foremen.

<sup>d</sup>The 1930 figure refers to semiskilled workers.

<sup>e</sup>The 1930 figure refers to servant classes.

N.A. Not available

TABLE A-5. LONGITUDINAL TRENDS IN PERCENTAGES WOMEN COMPRISED OF ALL WORKERS BY OCCUPATIONAL CATEGORY, THE UNITED STATES, 1930-1970<sup>a</sup>.

Year	Professionals	Managers	Clerical	Sales	Crafts-people	Operatives	Labors	Private Household Workers	Workers	Farmers and Farm Managers	Farm Laborers and Farm Forepersons	Farmers and Farm Managers Laborers and Forepersons	SID <sup>b</sup>
1930	49.15	6.65 <sup>c</sup>	38.70	N.A.	1.30 <sup>d</sup>	31.71 <sup>e</sup>	2.49	69.26 <sup>f</sup>	N.A.	4.37	13.86	N.A.	55.89
1940	45.40	11.70	52.60	27.90	2.10	28.70	3.20	93.80	40.10	2.90	9.30	8.00	52.28
1944	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1945	46.00	17.00	70.00	54.00	5.00	38.00	N.A.	94.00	48.00	N.A.	N.A.	22.00	42.03
1947	40.00	14.00	59.00	40.00	2.00	28.00	N.A.	92.00	44.00	N.A.	N.A.	12.00	43.54
1949	37.00	14.00	61.00	38.00	2.00	28.00	N.A.	92.00	44.00	N.A.	N.A.	14.00	42.42
1950	41.80	14.80	59.30	39.00	2.40	26.90	2.20	92.10	45.40	5.50	27.40	N.A.	47.89
1952	41.80	14.80	59.30	39.00	2.40	29.00	N.A.	98.00	46.00	N.A.	N.A.	13.00	47.33
1954	39.00	16.00	65.00	37.00	3.00	28.00	3.00	97.00	48.00	N.A.	N.A.	12.00	49.36
1954	37.00	16.00	65.00	36.00	3.00	27.00	3.00	98.00	48.00	4.00	32.00	N.A.	48.68
1958	35.83	15.42	68.10	39.66	2.53	27.59	2.63	99.02	53.13	4.19	38.43	N.A.	49.20
1960	33.00	15.00	68.00	39.00	3.00	28.00	2.00	98.00	53.00	4.00	30.00	N.A.	50.05
1962	37.00	15.00	69.00	39.00	3.00	28.00	3.00	98.00	54.00	5.00	26.00	N.A.	50.70
1965	37.40	14.80	69.90	40.60	3.20	27.70	3.20	97.50	54.80	6.00	29.50	N.A.	50.13
1966	37.32	15.66	71.64	41.34	2.61	29.48	3.11	97.02	55.20	6.19	35.38	N.A.	48.59
1967	37.35	15.72	72.28	41.87	2.84	30.09	3.43	97.20	56.31	5.16	32.38	N.A.	49.65
1968	38.60	15.70	72.60	39.70	3.30	29.90	3.50	97.60	47.00	4.10	29.80	N.A.	50.51
1969	37.30	15.80	74.50	43.00	3.30	31.20	4.00	97.60	59.30	4.30	33.80	N.A.	50.08
1970	39.80	16.50	73.50	38.00	5.00	30.50	8.36	96.40	54.90	4.60	15.23	9.80	51.53

<sup>a</sup>Sources follow Tables A-1 through A-5.

<sup>b</sup>Standard Measure of Differentiation

<sup>c</sup>The 1930 figure includes wholesale and retail dealers.

<sup>d</sup>The 1930 figure refers to skilled workers and foremen.

<sup>e</sup>The 1930 figure refers to semiskilled workers.

<sup>f</sup>The 1930 figure refers to servant classes.

N.A. Not available.

Sources for Tables A-1 through A-5

- Women's Bureau, United States Department of Labor, Bulletin No. 294, 1969 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1969.
- Women's Bureau, United States Department of Labor, Bulletin No. 290, 1965 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1965.
- Women's Bureau, United States Department of Labor, Bulletin No. 285, 1962 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1960.
- Women's Bureau, United States Department of Labor, Bulletin No. 275, 1960 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1960.
- Women's Bureau, United States Department of Labor, Bulletin No. 266, 1958 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1958.
- Women's Bureau, United States Department of Labor, Bulletin No. 242, 1952 Handbook of Facts on Women Workers, U.S. Government Printing Office, Washington, D.C., 1952.
- Women's Bureau, United States Department of Labor, Bulletin No. 237, 1950 Handbook of Facts on Women Workers, U.S. Government Printing Office, Washington, D.C., 1950.
- Women's Bureau, United States Department of Labor, Bulletin No. 242, 1954 Handbook on Women Workers, U.S. Government Printing Office, Washington, D.C., 1954.
- Women's Bureau, United States Department of Labor, Bulletin No. 237, Handbook of Facts on Women Workers, U.S. Government Printing Office, Washington, D.C., 1948.
- Women's Bureau, United States Department of Labor, Bulletin No. 211, Employment of Women in the Early Postwar Period, U.S. Government Printing Office, Washington, D.C., 1946.
- Women's Bureau, United States Department of Labor, Bulletin No. 253, Changes in Women's Occupations 1940-1950, U.S. Government Printing Office, Washington, D.C., 1954.
- Women's Bureau, United States Department of Labor, Bulletin No. 218, Janet M. Hooks, Women's Occupations Through Seven Decades, U.S. Government Printing Office, Washington, D.C., 1947.

Women's Bureau, U.S. Department of Labor, Background Facts on Women Workers in the United States, U.S. Government Printing Office, Washington, D.C., 1970.

Women's Bureau, U.S. Department of Labor, Women Workers Today, U.S. Government Printing Office, Washington, D.C., 1971.

TABLE A-6. LONGITUDINAL TRENDS IN MEDIAN SALARIES<sup>b</sup> OF FULL TIME FULL YEAR EMPLOYED MALE WORKERS, BY OCCUPATIONAL CATEGORY, UNITED STATES<sup>a</sup>, 1955-1969.

Year	Private Household Workers										Farm Laborers and Farm Forepersons.
	Professionals	Managers	Clerical	Sales	Craftspeople	Operatives	Laborers	Service Workers	Farmers and Farm Managers	Farm Laborers and Farm Forepersons.	
1955	7805	8097	6035	7159	6833	5867	4503	N.A.	5170	600	N.A.
1956	8354	8525	6269	7151	7117	6051	4872	N.A.	5031	684	2180
1957	8264	8429	6296	7095	7196	6066	5118	N.A.	4973	626	2094
1958	8747	8637	6499	7161	7205	5990	4931	N.A.	5235	658	1883
1959	9106	9205	6834	7387	7520	6137	5235	N.A.	5331	910	2181
1960	8979	9494	6880	7546	7694	6526	5077	N.A.	5361	654	2270
1961	9526	9531	6992	8000	7875	6630	5620	N.A.	5455	724	2327
1962	9444	9568	7174	7950	8024	6828	5622	N.A.	5656	754	2547
1963	9782	9688	7404	8235	8009	6950	5643	N.A.	5579	951	2099
1964	10020	9852	7679	8429	8185	7084	5553	N.A.	5885	944	2704
1965	10417	10899	7668	8846	8463	7175	5470	N.A.	6136	923	3025
1966	10703	10892	7762	9056	8611	7313	5918	N.A.	6076	1471	2978
1967	11075	11417	7858	9006	8704	7346	6027	N.A.	6326	1155	2895
1968	11330	11541	8205	9542	8904	7520	6143	N.A.	6761	1423	3425
1969	11933	12146	8438	9676	N.A.	7740	N.A.	N.A.	6750	N.A.	N.A.

<sup>a</sup> Sources Follow Tables A-6 through A-9.

<sup>b</sup> Standardized to the 1970 consumer price index.

TABLE A-7. LONGITUDINAL TRENDS IN MEDIAN SALARIES<sup>b</sup> OF FULL TIME FULL YEAR EMPLOYED FEMALE WORKERS, BY OCCUPATIONAL CATEGORY, UNITED STATES<sup>a</sup>, 1955-1969.

Year	Private Household Workers										Farm Laborers and Farm Forepersons
	Professionals	Managers	Clerical	Sales	Craftspeople	Operatives	Laborers	Service Workers	Farmers and Farm Managers	Forepersons	
1955	5075	N.A.	4445	N.A.	N.A.	3609	N.A.	N.A.	2551	N.A.	N.A.
1956	5215	5036	4493	2986	N.A.	3760	N.A.	N.A.	2786	N.A.	N.A.
1957	5256	5367	4535	3158	N.A.	3602	N.A.	N.A.	2752	N.A.	N.A.
1958	5568	5064	4550	3133	N.A.	3686	N.A.	N.A.	2784	N.A.	N.A.
1959	5842	5241	4653	3117	N.A.	3885	N.A.	N.A.	2985	N.A.	N.A.
1960	5748	5471	4702	3103	N.A.	3994	N.A.	N.A.	2170	N.A.	N.A.
1961	6439	5075	4858	3127	N.A.	3797	N.A.	N.A.	3059	N.A.	N.A.
1962	6242	5534	4919	3465	N.A.	4053	N.A.	N.A.	2931	N.A.	N.A.
1963	6339	5351	5011	3210	N.A.	3986	N.A.	N.A.	3206	N.A.	N.A.
1964	6447	5469	5083	3404	N.A.	4095	N.A.	N.A.	3161	N.A.	N.A.
1965	6934	5653	5112	3644	4951	4094	N.A.	N.A.	3208	N.A.	N.A.
1966	6971	5886	5164	3713	5199	4087	N.A.	N.A.	3368	N.A.	N.A.
1967	7335	6212	5277	3818	4982	4244	N.A.	N.A.	3572	N.A.	N.A.
1968	7468	6289	5345	3863	5162	4454	N.A.	N.A.	3719	N.A.	N.A.
1969	7742	6452	5494	3923	N.A.	4573	N.A.	N.A.	3977	N.A.	N.A.

<sup>a</sup>Sources follow Tables A-6 through A-9.  
<sup>b</sup>Standardized to the 1970 consumer price index.

TABLE A-8. LONGITUDINAL TRENDS IN FULL TIME FULL YEAR FEMALE MEDIAN SALARIES AS A PERCENTAGE OF FULL TIME FULL YEAR MALE MEDIAN SALARIES BY OCCUPATIONAL CATEGORY, THE UNITED STATES, 1955 THROUGH 1969.

Year	Professionals	Managers	Clerical	Sales	Craftspeople	Operatives	Laborers	Private			Farm Laborers and Farm Forepersons	Sexual Income Differential
								Household Workers	Service Workers	Farmers and Farm Managers		
1955	65.03	N.A.	73.64	N.A.	N.A.	61.52	N.A.	N.A.	49.34	N.A.	N.A.	N.A.
1956	62.43	59.07	71.67	41.76	N.A.	62.15	N.A.	N.A.	55.38	N.A.	N.A.	N.A.
1957	63.61	63.67	72.02	44.51	N.A.	59.38	N.A.	N.A.	55.34	N.A.	N.A.	N.A.
1958	63.66	58.64	70.01	43.75	N.A.	61.55	N.A.	N.A.	53.18	N.A.	N.A.	49.81
1959	64.16	56.93	68.09	42.20	N.A.	63.29	N.A.	N.A.	56.00	N.A.	N.A.	59.34
1960	64.02	57.63	68.34	42.19	N.A.	59.67	N.A.	N.A.	59.13	N.A.	N.A.	59.64
1961	67.60	53.25	69.48	39.09	N.A.	57.26	N.A.	N.A.	56.08	N.A.	N.A.	N.A.
1962	66.10	47.83	68.56	43.58	N.A.	59.35	N.A.	N.A.	51.82	N.A.	N.A.	59.08
1963	64.80	55.23	67.68	38.98	N.A.	57.35	N.A.	N.A.	57.47	N.A.	N.A.	N.A.
1964	64.34	55.51	66.19	40.38	N.A.	57.80	N.A.	N.A.	53.71	N.A.	N.A.	N.A.
1965	66.56	51.86	66.67	41.19	58.50	57.07	N.A.	N.A.	52.29	N.A.	N.A.	57.43
1966	65.13	54.04	66.53	41.00	60.37	55.89	N.A.	N.A.	55.44	N.A.	N.A.	57.66
1967	66.23	54.41	67.15	42.39	57.24	57.77	N.A.	N.A.	56.46	N.A.	N.A.	58.68
1968	65.91	54.50	65.15	40.48	57.97	59.23	N.A.	N.A.	55.00	N.A.	N.A.	57.81
1969	64.88	53.12	65.11	40.55	N.A.	49.08	N.A.	N.A.	58.92	N.A.	N.A.	57.98

<sup>a</sup>Sources follow Tables A-6 through A-9.

TABLE A-9. LONGITUDINAL TRENDS IN FULL TIME FULL YEAR EMPLOYED WORKERS SALARIES, BY SEX, 1955-1970<sup>a</sup>.

Year	Full Time Full Year Female Median Salary	Full Time Full Year Male Median Salary	Standard Income Change	Median Income Ratio
1955	3942.89	6165.93	N.A.	63.95
1956	4039.07	6380.78	2.44	63.30
1957	4149.82	6502.04	2.74	63.82
1958	4165.85	6616.74	.39	62.96
1959	4253.67	6939.36	2.11	61.30
1960	4317.76	7102.56	1.50	60.79
1961	4349.57	7325.86	.74	59.37
1962	4423.50	7437.55	1.70	59.48
1963	4516.29	7581.69	2.10	59.57
1964	4619.45	7755.42	2.28	59.56
1965	4704.92	7845.63	1.85	59.97
1966	4753.70	8193.64	1.04	58.02
1967	4826.45	8352.66	1.53	57.78
1968	4974.56	8553.96	3.07	58.16
1969	5271.63	8714.02	5.97	60.50
1970	5323.00	8966.00	.97	59.37

<sup>a</sup>Sources follow Tables A-6 and A-9.

Sources for Tables A-6 through A-9

- U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 69 (U.S. Government Printing Office, Washington, D.C., 1970).
- U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 75, (U.S. Government Printing Office, Washington, D.C., 1970).
- U.S. Bureau of the Census, Statistical Abstract of the United States: 1974, (95th Edition) Washington, D.C., 1974, pp. 4-11.
- Women's Bureau, U.S. Department of Labor, Fact Sheet on the Earnings Gap, U.S. Government Printing Office, Washington, D.C., 1972.

TABLE A-10. LONGITUDINAL TRENDS IN FERTILITY RATES BY AGE GROUP: THE UNITED STATES, 1930-1970.

Year	Age 10 to 14	Age 15 to 19	Age 20 to 24	Age 25 to 29	Age 30 to 34	Age 35 to 39	Age 40 to 44	Age 45 to 49	Total Fertility Rate
1930	.30	43.70	123.50	119.40	89.50	55.80	21.50	2.20	2274.50
1931	.30	40.70	116.40	113.80	82.30	51.90	20.00	2.00	2137.00
1932	.30	38.90	112.40	110.20	78.70	49.50	19.20	1.90	2055.50
1933	.30	36.40	105.20	104.50	73.70	45.70	18.10	1.90	1929.00
1934	.30	37.40	109.10	107.10	75.30	44.30	17.90	1.80	1866.00
1935	.40	38.20	109.70	106.20	72.50	43.80	16.90	1.70	1947.00
1936	.40	38.20	111.30	105.50	71.30	42.00	15.60	1.60	1929.50
1937	.30	40.10	115.40	107.30	72.10	40.60	14.70	1.40	1959.50
1938	.40	41.50	119.60	111.10	74.20	40.70	14.40	1.40	2016.50
1939	.40	40.40	115.80	110.30	74.00	40.00	13.20	1.30	1977.00
1940	.70	54.10	135.60	122.80	83.40	46.30	15.60	1.90	2302.00
1941	.70	56.90	145.40	128.70	85.30	46.10	15.00	1.70	2399.00
1942	.70	61.10	165.10	142.70	91.80	47.90	14.70	1.60	2628.00
1943	.80	61.70	164.00	147.80	89.50	52.80	15.70	1.50	2719.00
1944	.80	54.80	151.80	136.50	98.10	54.60	16.10	1.40	2568.00
1945	.80	51.10	138.90	132.20	100.20	56.90	16.60	1.60	2491.40
1946	.70	59.30	181.80	161.20	108.90	58.70	16.50	1.50	2943.00
1947	.90	79.30	209.70	176.00	111.90	58.90	16.60	1.40	3273.50
1948	1.00	81.80	200.30	163.40	103.70	54.50	15.70	1.30	3108.50
1949	1.00	83.40	200.10	165.40	102.10	53.50	15.30	1.30	3110.50
1950	1.00	81.60	196.60	166.10	103.70	52.90	15.10	1.20	3091.00
1951	.90	87.60	211.60	175.30	107.90	54.10	15.40	1.10	3269.50
1952	.90	86.10	217.60	182.00	112.60	55.80	15.60	1.30	3359.00
1953	1.00	88.20	224.60	184.10	113.40	56.60	15.80	1.00	3423.50
1954	.90	90.60	236.20	188.40	116.90	57.90	16.20	1.00	3540.50
1955	.90	90.50	242.00	190.50	116.20	58.70	16.10	1.00	3579.50
1956	1.00	94.60	253.70	194.70	117.30	59.30	16.30	1.00	3689.50

TABLE A-10 - CONTINUED

Year	Age 10 to 14	Age 15 to 19	Age 20 to 24	Age 25 to 29	Age 30 to 34	Age 35 to 39	Age 40 to 44	Age 45 to 49	Total Fertility Rate
1957	1.00	96.30	260.60	199.40	118.90	49.90	16.30	1.10	3767.50
1958	.90	91.40	288.20	198.30	116.20	58.30	15.70	.90	3699.50
1959	.90	90.40	260.10	200.50	115.60	58.20	15.50	1.10	3711.50
1960	.80	89.10	258.10	197.40	112.70	56.20	15.50	.90	3653.50
1961	.90	88.00	253.70	197.90	113.30	55.60	15.60	.90	3629.50
1962	.80	81.20	243.70	191.70	109.90	52.70	14.80	.90	3473.50
1963	.90	76.40	231.20	185.80	106.20	51.30	14.20	.90	3334.50
1964	.90	72.80	219.90	179.40	103.90	50.00	13.80	.80	3207.50
1965	.80	70.40	196.80	162.50	95.00	56.40	12.80	.80	2927.50
1966	.90	60.60	185.90	149.40	85.90	42.20	11.70	.70	2736.50
1967	.90	67.90	174.00	142.60	79.30	38.50	10.60	.70	2572.50
1968	1.00	66.10	167.40	140.30	74.90	35.60	9.60	.60	2477.50
1969	1.00	66.10	166.00	143.00	74.10	33.40	8.80	.50	2464.50
1970	1.20	68.30	167.80	145.10	73.30	31.70	8.10	.50	2480.00

Sources: U.S. Bureau of the Census, Vital Statistics Rates in the United States, 1900-1940, (Washington, D.C., 1943), p. 671.

U.S. Bureau of the Census, Statistical Abstract of the United States: 1974 (95th Edition), Washington, D.C., 1974, p. 54.

U.S. Department of Health, Education and Welfare, Vital Statistics of the United States, 1948, (Rockville, M.D., 1970), pp. 1-7.

TABLE A-11. NUMBER OF FAMILIES IN SAMPLE AND INDICES OF STRUCTURAL CONDITIONS OF FEMALE EMPLOYMENT,  
BY STANDARD METROPOLITAN STATISTICAL AREA, 1970.

Standard Metropolitan Statistical Area	Number of Families Selected	Standard Measure of Differentiation	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women, in 1970 Dollars	Sexual Income Differentiation
Boston, Mass.	831	62.76	31.99	4911	49.61
Worcester, Mass.	829	65.20	28.13	4218	45.91
Hartford, Conn.	888	64.26	30.79	4792	48.39
Syracuse, N.Y.	860	60.67	30.28	4994	51.24
Buffalo, N.Y.	880	64.98	29.39	4402	44.07
New York, N.Y.	849	56.14	38.00	5877	53.79
Jersey City, N.J.	776	70.99	36.49	4895	57.61
Wilmington, DEL.-N.J.-MD.	756	69.33	27.03	4914	49.09
Lancaster, PA.	478	60.97	30.49	4059	49.19
Baltimore, MD.	880	54.27	32.38	5076	49.55
Newport News-Hampton, VA.	491	64.55	31.56	4640	50.77
Greensboro-Winston-Salem- High Point, N.C.	911	63.01	28.93	4582	62.86
Greenville, S.C.	473	64.86	23.18	4419	60.94
Charleston, S.C.	446	57.55	30.28	3906	46.66
Orlando, Fla.	651	69.01	33.33	4848	52.43
Fort Lauderdale-Hollywood, Fla.	682	64.61	32.15	5019	54.48

TABLE A-11 - CONTINUED.

Standard Metropolitan Statistical Area	Number of Families Selected	Standard Measure of Differentiation	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women, in 1970 Dollars	Sexual Income Differentiation
Huntington-Ashland, W. VA.-KY.-Ohio	390	60.02	25.38	4126	47.06
Columbus, Ohio	923	64.37	33.05	4815	51.55
Akron, Ohio	900	73.94	25.36	5039	53.20
Cleveland, Ohio	867	67.17	29.84	4688	46.59
Fort Wayne, Ind.	444	68.26	31.16	4798	49.62
Chicago, Ill.	900	59.42	31.44	5291	51.28
Gary-Hammond-East Chicago, Ind.	932	71.46	23.68	5399	52.58
Peoria, Ill.	543	67.17	29.84	4786	47.00
Davenport-Rock Island-Moline, Iowa-Ill.	573	66.87	32.15	4509	46.98
Minneapolis-St. Paul, Minn.	985	66.28	30.59	4838	48.94
Tulsa, Okla.	780	68.33	33.63	4526	54.86
Dallas, Texas	990	60.28	34.14	5009	55.65
Jackson, Miss.	371	65.64	37.25	3925	54.27
Mobile, Ala.	540	54.34	30.29	4084	50.06
Corpus Christi, Texas	411	70.37	30.05	4501	54.10
El Paso, Texas	513	63.13	33.26	4238	56.36

TABLE A-11 - CONTINUED.

Standard Metropolitan Statistical Area	Number of Families Selected	Standard Measure of Differentiation	Prevalence of Female Sex Typed Secondary Careers	Mean Income of Employed Women, in 1970 Dollars	Sexual Income Differentiation
Albuquerque, N.M.	499	71.71	35.29	4584	53.48
Denver, Colo.	987	60.29	33.01	4659	48.92
Salt Lake City, Utah	868	73.59	29.35	4714	50.14
Spokane, Wash.	412	66.03	39.18	4389	45.40
Tacoma, Wash.	596	69.71	32.47	4822	49.96
Los Angeles-Long Beach, Calif.	879	70.14	35.45	5628	57.78
Bakersfield, Calif.	492	67.03	37.42	4905	52.08
Fresno, Calif.	603	60.96	41.09	4803	46.72
Santa Barbara, Calif.	399	68.99	33.41	4973	44.53
San Jose, Calif.	972	63.96	28.60	6008	53.98
TOTAL	29450				

TABLE A-12. LABOR FORCE PARTICIPATION RATES OF WIVES OF CHILDBEARING AGE, HUSBAND PRESENT, BY AGE OF WIVES AND STANDARD METROPOLITAN STATISTICAL AREAS.

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Sum Age 15-44
Boston, Mass.	181.82	528.93	358.02	300.00	446.97	478.26	537.41	2831.41
Worcester, Mass.	416.67	467.74	395.68	357.14	485.29	528.17	660.00	3310.70
Hartford, Conn.	500.00	507.94	317.24	455.13	563.41	547.77	591.19	3382.69
Syracuse, N.Y.	437.50	474.14	320.75	349.21	41.026	469.88	543.75	3005.48
Buffalo, N.Y.	125.00	394.49	369.43	338.35	404.95	480.00	455.62	2567.84
New York, N.Y.	500.00	420.00	275.86	256.00	409.40	500.00	574.32	2935.58
Jersey City, N.J.	235.29	553.72	394.35	339.81	452.55	515.38	582.73	3074.84
Wilmington, Del.-N.J.-Md.	263.16	491.38	347.52	372.26	371.90	428.57	470.08	2744.87
Lancaster, Pa.	100.00	539.68	388.89	443.04	594.59	468.08	558.82	3093.11
Baltimore, Md.	384.61	546.22	395.83	459.26	422.53	570.55	476.82	3255.83
Newport News-Hampton, Va.	333.33	430.11	400.00	400.00	376.81	455.88	587.50	2983.63
Greensboro-Winston-Salem-High Point, N.C.	434.78	680.00	523.81	476.19	632.91	548.61	612.68	3908.98
Greenville, S.C.	652.17	521.74	431.82	562.50	480.00	486.11	609.76	3744.10
Charleston, S.C.	222.22	420.45	378.38	450.70	450.98	426.47	460.53	2809.73
Orlando, Fla.	315.79	530.61	485.71	393.62	423.73	578.43	426.09	3153.98
Ft. Lauderdale-Hollywood, Fla.	500.00	404.04	445.45	423.73	459.77	520.00	440.94	3193.94
Huntington-Ashland, W.Va.-Ky.-Ohio	222.22	387.10	349.21	246.57	340.00	385.71	333.33	2264.15

TABLE A-12 - CONTINUED

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Sum Age 15-44
Columbus, Ohio	360.00	531.79	427.71	509.09	457.75	500.00	439.39	3225.73
Akron, Ohio	473.68	402.98	306.67	357.14	370.97	432.10	421.05	2764.60
Cleveland, Ohio	300.00	481.48	313.33	296.88	458.65	509.68	465.75	2825.76
Fort Wayne, Ind.	538.46	534.09	426.67	394.74	433.96	527.03	476.92	3331.87
Chicago, Ill.	166.67	500.00	366.01	385.62	432.84	469.39	547.49	3868.01
Gary-Hammons-East Chicago, Ind.	280.00	384.11	290.91	251.97	390.07	316.13	392.86	2306.04
Peoria, Ill.	368.42	459.77	323.43	380.43	458.33	452.38	413.79	2856.66
Davenport-Rock Island- Moline, Iowa, Ill.	647.06	395.83	366.34	340.91	500.00	542.55	483.52	3276.21
Minneapolis, Minn.	523.81	607.14	385.00	377.24	443.66	487.01	533.83	3357.71
Tulsa, Okla.	411.76	435.48	438.46	341.88	433.07	458.65	478.26	2997.57
Dallas, Texas	428.57	522.58	424.42	435.03	539.39	503.65	437.04	3290.68
Jackson, Miss.	500.00	555.55	428.57	606.06	473.68	521.74	420.00	3505.61
Mobile, Ala.	277.78	395.35	371.68	275.00	384.61	573.16	409.64	2687.23
Corpus Christi, Texas	470.49	312.50	295.08	371.43	328.77	376.62	367.35	2522.33
El Paso, Texas	200.00	357.14	452.38	365.59	322.58	373.13	305.55	2376.38
Albuquerque, N.M.	375.00	463.41	426.97	333.33	379.75	419.75	455.88	2854.09
Denver, Colo.	333.33	515.92	391.53	481.71	475.61	470.97	503.82	3172.89

TABLE A-12 - CONTINUED

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Sum Age 15-44
Salt Lake City, Utah	354.84	437.50	322.03	361.84	390.48	470.15	520.00	2856.84
Spokane, Wash.	250.00	477.61	379.31	375.00	460.32	500.00	493.83	2936.07
Tacoma, Wash.	392.86	409.09	365.22	284.21	482.35	470.00	376.47	2780.20
Los Angeles, -Long Beach, Calif.	458.33	553.03	391.30	458.01	447.76	395.16	515.33	3216.94
Bakersfield, Calif.	360.00	376.92	296.70	378.05	394.74	454.54	415.38	2576.34
Fresno, Calif.	307.69	434.78	407.41	425.53	402.30	458.72	510.00	2946.43
Santa Barbara, Calif.	300.00	484.38	316.46	394.74	408.16	500.00	576.27	2980.00
San Jose, Calif.	421.05	516.78	405.26	340.91	417.72	405.40	515.15	3022.28

TABLE A-13. FERTILITY RATES OF MARRIED WOMEN, HUSBAND PRESENT, BY AGE AND STANDARD METROPOLITAN STATISTICAL AREAS.

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Total Fertility Rate
Boston, Mass.	272.73	206.61	191.36	150.00	15.15	14.49	0	850.34
Worcester, Mass.	166.67	354.84	244.60	63.49	29.41	7.04	0	866.06
Hartford, Conn.	318.18	285.71	186.21	70.51	16.26	19.11	0	895.98
Syracuse, N.Y.	187.50	181.03	150.94	134.92	42.73	18.07	12.50	727.70
Buffalo, N.Y.	562.50	275.23	235.67	120.30	66.12	5.71	0	1265.53
New York, N.Y.	83.33	240.00	179.31	80.00	20.13	23.53	0	626.31
Jersey City, N.J.	235.29	165.29	170.54	77.67	65.69	0	0	714.49
Wilmington, Del.-N.J.-Md.	421.05	206.90	184.40	58.39	24.79	9.52	0	905.06
Lancaster, Pa.	300.00	190.48	133.33	75.95	27.03	21.28	0	748.06
Baltimore, Md.	230.77	218.49	138.89	74.07	42.24	6.13	0	710.61
Newport News-Hampton, Va.	95.24	139.78	105.26	61.54	14.49	0	0	416.32
Greensboro-Winston-Salem-High Point, N.C.	260.87	206.67	176.87	81.63	44.30	13.89	7.04	791.27
Greenville, S.C.	304.25	217.39	113.64	31.25	26.67	0	0	693.29
Charleston, S.C.	277.78	204.54	202.70	14.08	58.82	29.41	0	787.35
Orlando, Fla.	157.89	173.47	161.90	53.19	25.42	9.80	8.70	590.38
Ft. Lauderdale-Hollywood, Fla.	250.00	282.83	236.36	50.85	34.48	16.00	0	770.52

TABLE A-13 - CONTINUED

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Total Fertility Rate
Huntington-Ashland, W.Va.- Ky.-Ohio	333.33	241.93	142.86	82.19	0	28.57	0	822.89
Columbus, Ohio	160.00	271.68	198.79	60.61	21.13	8.33	0	720.54
Akron, Ohio	157.89	238.81	213.33	107.14	40.32	6.17	5.85	769.52
Cleveland, Ohio	400.00	200.00	220.00	117.19	45.11	12.90	0	995.20
Fort Wayne, Ind.	538.46	204.54	253.33	39.47	56.60	13.51	0	1105.93
Chicago, Ill.	166.67	224.14	143.79	130.72	52.24	13.60	11.17	742.33
Gary-Hammond-East Chicago, Ind.	160.00	298.01	187.88	133.86	28.37	25.81	5.95	839.88
Peoria, Ill.	421.05	252.87	196.08	108.70	69.44	11.90	0	1060.05
Davenport-Rock Island-Moline, Iowa, Ill.	235.29	250.00	138.61	147.73	58.14	0	0	829.77
Minneapolis, St. Paul, Minn.	380.95	154.76	205.00	77.84	56.34	25.97	7.52	908.39
Tulsa, Okla.	235.29	193.55	138.46	76.92	55.12	7.52	0	706.86
Dallas, Texas	142.86	193.55	203.49	50.85	24.24	0	7.41	622.39
Jackson, Miss.	125.00	253.97	155.84	136.36	26.32	0	0	697.49
Mobile, Ala.	444.44	313.95	159.29	100.00	51.28	0	0	1068.97
Corpus Christi, Texas	294.12	218.75	295.08	157.14	54.79	12.99	0	1032.87
El Paso, Texas	250.00	238.09	285.71	43.01	43.01	0	0	859.83

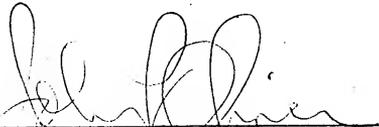
TABLE A-13 - CONTINUED

Standard Metropolitan Statistical Areas	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Total Fertility Rate
Albuquerque, N.M.	187.50	158.54	202.25	59.52	50.63	37.04	0	695.48
Denver, Colo.	259.26	184.71	158.73	91.46	30.49	0	0	724.65
Salt Lake City, Utah	193.55	277.78	254.24	118.42	47.62	37.31	8.00	936.92
Spokane, Wash.	500.00	298.51	160.92	142.86	31.75	20.00	0	1154.03
Tacoma, Wash.	214.29	250.00	156.52	94.74	23.53	30.00	0	769.07
Los Angeles-Long Beach Calif.	250.00	204.54	250.00	99.24	44.78	24.19	6.67	879.42
Bakersfield, Calif.	200.00	338.46	197.80	97.56	65.79	11.36	0	910.98
Fresno, Calif.	230.77	217.39	166.67	85.11	22.99	18.35	10.00	751.27
Santa Barbara, Calif.	200.00	171.88	177.21	92.10	20.41	16.13	0	677.73
San Jose, Calif.	473.68	140.94	163.16	79.54	37.97	13.51	0	908.82

## BIOGRAPHICAL SKETCH

Kimball P. Marshall was born in Abbeville, Louisiana on August 15, 1947. He attended Cathedral High School in Lafayette, Louisiana and graduated in 1965. From 1966 to 1968 he attended the University of Southwest Louisiana and from 1969 to 1971 he attended the University of St. Thomas in Houston, Texas. He graduated Summa cum laude with a Bachelor of Arts Degree in Sociology. From 1971 to present, Mr. Marshall has been attending the University of Florida, from which he received his Master of Arts Degree in December, 1972.

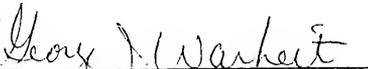
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John Parker Oliver  
Assistant Professor of  
Astronomy

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This dissertation was submitted to the Graduate Faculty of the Department of Sociology in the College of Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1975

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Dean, Graduate School

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Benjamin L. Gorman, Chairman  
Professor of Sociology

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Felix M. Berardo  
Professor of Sociology

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Gerald R. Leslie  
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