National Library of Canada
Canadian Theses Service
Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Service des thèses canadiennes

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

NL-339 (r. 88/04) c

Canada

UNIVERSITY OF ALBERTA

DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELLING APPROACH

by

JOHN JAYACHANDRAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

IN

DEMOGRAPHY

DEPARTMENT OF SOCIOLOGY

EDMONTON, ALBERTA

SPRING 1990

National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

ISBN 0-315-60201-5

NL-339 (r. 88/04) c

Canada

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR JOHN JAYACHANDRAN

TITLE OF THESIS DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELLING APPROACH

DEGREE FOR WHICH THESIS WAS PRESENTED DOCTOR OF PHILOSOPHY

YEAR THIS DEGREE GRANTED SPRING 1990

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(SIGNED) .....

PERMANENT ADDRESS:

ANJUKULIPATTY(PO)

MEMBARPATTY(VIA)

DINDIGUL(TK). TAMIL NADU. INDIA

DATED April 18 1990

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the FACULTY OF GRADUATE STUDIES AND RESEARCH, for acceptance, a thesis entitled DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELING APPROACH submitted by JOHN JAYACHANDRAN in partial fulfilment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

.....

Supervisor

.....

.....

.....

.....

.....

External Examiner

APR 1 1 1990

Date.....

DEDICATION

This thesis is dedicated to the memory of my father,

JOHN NALLAKAMAN

ABSTRACT

The major objectives of this thesis have been to identify crucial determinants of fertility and to develop a causal model of these determinants for women in Canada.

A critical review of theoretical and empirical models on fertility were carried out. Subsequently, four areas were selected to fulfill the objectives of the thesis: structural/background factors, economic factors, sociopsychological factors, and biological factors.

The data for the analysis were taken from the Canadian Fertility Survey, 1984. Techniques such as multiple classification analysis, multiple regression analysis, and regression decomposition analysis were employed to identify fertility determinants, and the LISREL computer programme was used to develop the causal model.

Analysis of structural factors revealed that fertility differentials by these factors have narrowed, particularly for ethnicity and religion. However, when ethnicity was combined with religion the fertility differentials were substantial for the British and the French. Eastern Europeans and "other" ethnic groups had smaller family size in relation to the two charter groups. Nativity and residence in youth were significantly related to fertility.

Economic analysis of fertility included both objective and subjective economic measures. Wife's education, income and commitment to work showed expected relationship and explained a substantial variation in fertility. Measures

such as couple's standard of living, their financial plan for future and their financial success contributed very little for fertility explanation.

Sociopsychological process within the family were assessed by gender role egalitarianism and the subjective value of children. Couples in joint-role relationships had fewer children than their counterparts. While the subjective benefit of children was positively related to fertility, the evidence was less than conclusive for subjective cost of children.

The causal model hypothesized that fertility is a direct function of biological variables and an indirect function of sociopsychological and economic variables. The hypothesis held true only for the sociopsychological variables. The variables used in the model explained a significant portion of variance in regional fertility differentials but less so for ethnicity and religion.

Studies which focus on couples as the unit of analysis, valid measures for sociopsychological processes within the family, and other methods of analysis are recommended as directions for future research.

ACKNOWLEDGEMENTS

This thesis could not have been completed without the help of a number of people. I would like to thank the members of my committee for their valuable assistance. Prof. Karol Krotki who served as the supervisor was very supportive and encouraging throughout the thesis work. I am particularly thankful to Prof. Krotki for permitting me to use the Canadian Fertility Survey data. Professors Mike Gillespie, N. M. Lalu, and Frank Trovato provided academic guidence at various stages of the thesis. I would also like to thank Prof. T. S. Veeman and Dr. A. Romaniuc who served as my external committee member and external examiner respectively for their critical assessment of my thesis and the valuable comments they made.

I owe special thanks to Chuck Humphrey for providing computer consultation. Thanks must also go to Linda Abbot and Denise Joseph for allocating computer funds when required. Kerri Calvert was also extremely helpful in locating library resources.

I am also grateful to fellow students and staff of the Sociology Department for their support and friendship over the years. Finally, this thesis would not have been completed without the wonderful love, support and encouragement from my spouse and counselor Dalbir.

Table of Contents

Chapter — Page

DEDICATION iv

ABSTRACT v

ACKNOWLEDGEMENTS vii

1. INTRODUCTION 1

1.1 Statement of the Problem 1

1.2 Approaches to Study the Determinants of Fertility 3

1.2.1 Economic Approach 3

1.2.2 Sociological Approach 9

1.2.3 Psychological Approach 12

1.3 Trends in Canadian Fertility 16

1.4 Rationale and Scope of the Thesis 19

1.5 Outline of the Thesis 21

2. REVIEW OF LITERATURE 23

2.1 American Literature 23

2.2 Canadian Literature 27

3. DATA AND METHODOLOGY 32

3.1 Variables and their Measurement 38

3.2 Method of Analysis 44

4. STRUCTURAL FACTORS AND FERTILITY 48

4.1 Bivariate Analysis of Structural Factors 58

4.2 Multivariate Analysis of Structural Factors 61

4.3 Regression Decomposition Analysis 72

5. ECONOMIC DETERMINANTS OF FERTILITY 82

5.1 Conceptualization of Economic Variables 89

5.2 Bivariate Analysis of Economic Variables 94

5.3 Multivariate Analysis of Economic Variables 104

6. SOCIOPSYCHOLOGICAL AND BIOLOGICAL DETERMINANTS OF FERTILITY 114

6.1 Formulation of Sociopsychological Concepts 120

6.2 Bivariate Analysis of Sociopsychological Factors 123

6.3 Multivariate Analysis of Sociopsychological Variables 130

6.4 Biological Determinants and Fertility 149

6.4.1 Bivariate Analysis of Biological Factors .152

6.4.2 Multivariate Analysis of Biological Factors 154

7. A CAUSAL MODEL FOR THE DETERMINANTS OF FERTILITY 161

7.1 Theoretical Framework 162

7.1.1 Socioeconomic Determinants 162

7.1.2 Social Psychological Processes 163

7.2 The Causal Model 165

7.2.1 Selection of Variables 166

7.2.1.1 Socioeconomic Determinants 167

7.2.1.2 Social Psychological Processes ...169

7.2.1.3 Proximate determinants 170

7.3 Method of Analysis 171

7.4 Findings 174

7.4.1 Endogenous Variables 175

7.4.2 Exogenous Variables 183

7.5 Discussion and Conclusion 188

7.6 Analysis of subgroups 191

7.6.1 Ethnic Differences 191

7.6.2 Religious Differences 201

7.6.3 Regional Differences 208

8. Summary and Conclusions 216
8.1 Summary of the Thesis 216
8.2 Broader Relevance of the Thesis 236
8.3 Suggestions for Future Research 238
BIBLIOGRAPHY 240
APPENDIX A 259
APPENDIX B 260
APPENDIX C 266
APPENDIX D 270

List of Tables

Table		Page
1.1	Crude birth, total fertility, and gross reproduction rates	18
3.1	Comparison of distribution on selected variables between the 1984 survey and 1981 census	36
3.2	Unadjusted deviations of current and expected family size by respondent's age	40
4.1	Current family size(net age) by structural factors. Unadjusted and adjusted deviations by marriage duration	59
4.2	Current family size(net age) by structural factors. Unadjusted and adjusted for deviations by independent variables and marriage duration.	62
4.3	Means and standard deviations for study variables by religion and ethnicity	67
4.4	Multiple regression analysis of current family size by ethnicity and religion	69
4.5	Regression decomposition of current family size(net age) by ethnicity and religion	73
5.1	Pearson correlation coefficients for economic variables	95
5.2	Unadjusted and adjusted deviations for current family size (net age) by economic variables	98
5.3	Unadjusted and adjusted deviations for expected family size (net age) by economic variables	102
5.4	Unadjusted and adjusted deviations for current family size (net age) by economic variables within levels of standard of living.	106
6.1	Pearson correlation coefficients for sociopsychological variables.	124
6.2	Unadjusted and adjusted deviations for current family size (net age) by sociopsychological variables.	128

Table Page

6.3 Unadjusted and adjusted deviations for current family size within levels of relative occupational status of wife by gender role egalitarianism 132

6.4 Unadjusted and adjusted deviations for current family size within couples labor force status by gender role egalitarianism. 136

6.5 Unadjusted and adjusted deviations for current family size within wife's labor force participation by value of children 145

6.6 Pearson correlation coefficients for biological and other independent variables 153

6.7 Unadjusted and adjusted deviations for current family size within duration of marriage by other independent variables. 156

7.1 Indirect and total effects of endogenous and exogenous variables for the model in fig 7.2 176

7.2 Standardized coefficients, correlation of etas and explained variance 180

7.3 Disturbance terms, error variances and covariances 182

7.4 Means and standard deviations for study variables by marriage duration and ethnicity. 192

7.5 Multiple regression analysis of current family size by ethnicity and marriage duration 195

7.6 Regression decomposition of current family size (net age) by ethnicity 197

7.7 Means and standard deviations for study variables by marriage duration and religion 202

7.8 Multiple regression analysis of current family size by religion and marriage duration 204

7.9 Regression decomposition of current family size (net age) by religion 205

Table Page

7.10 Means and standard deviations for study variables by marriage duration and region 210

7.11 Mutiple regression analysis of current family size by region and marriage duration 211

7.12 Regression decomposition of current family size (net age) by region 213

List of Figures

Figure		Page
7.1	Proposed causal model for the determinants of fertility	172
7.2	Causal model for the determinants of fertility in Canada, 1984	177

Chapter 1

INTRODUCTION

1.1 Statement of the Problem

Human fertility is an outcome of interplay between various socioeconomic, psychological, and biological factors. Understanding of human fertility behaviour, therefore, requires knowledge of the contribution of these factors pertaining to fertility decision-making processes. Although environmental factors play a role in such decisions, it is the couple that ultimately decides when and how many children to have under given conditions.

The complex nature of causation in fertility behaviour has motivated scholars from several disciplines to develop a comprehensive theoretical framework with the inclusion of all relevant variables (Davis and Blake, 1956; Freedman, 1962; Bulatao and Lee, 1983). Theories from economics, sociology, and demography typically stress the constraining role of environment. Psychological theories begin with people's needs, motives or other mental events to model the primary antecedents of fertility (Bagozzi and Van Loo, 1978). Some psychological theories are concerned with the decision process itself or the rules governing it (eg. Fishbein, 1972; Hass, 1974). Among anthropological approaches, several discuss fertility determinants at the societal or cultural level with no references to couples making decisions, while others focus specifically on these

decisions (Bartlett, 1980; Hull, 1983). Despite the amount of work that has gone into developing an adequate 'theory of fertility' there is not yet a single theory that can be described as such (Westoff et al., 1961; Farooq and Simmons, 1985; Bulatao and Lee, 1983). Under these circumstances, it would be of greater scientific and policy interest to examine the relationship between variables and fertility decision-making processes simultaneously through causal models.

Researchers in Canada studying fertility focus mainly on fertility in relation to variables such as region, residence, ethnicity, religion and other structural factors. Some of these factors are becoming less important in explaining fertility differentials (Lapierre-Adamcyk in Veevers, 1983). Nevertheless, there is a growing need to understand how various socioeconomic, psychological, and biological variables are causally linked to fertility. One such attempt is made by Balakrishnan et al.(1979) to study the explanatory power of background variables on fertility. Unfortunately, there are not many studies available in modelling the determinants of fertility in Canada. This could be, to some extent, due to a lack of quality survey data necessary to obtain estimates of intermediate variables. The objectives of this thesis, therefore, are to examine the relevance of various socioeconomic, psychological and biological factors in fertility explanations, and to develop a causal model to understand

how these factors influence fertility. In doing this, no attempt will be made to test any particular framework suggested by previous researchers. Instead, knowledge gained from these frameworks will be used in formulating the causal model. Analysis of this kind will provide better understanding of the dynamics of fertility in Canada.

1.2 Approaches to Study the Determinants of Fertility

1.2.1 Economic Approach

The notion that economic factors play a central role in fertility decisions and consequent fertility behaviour is hardly new. The transition theory, which summarizes the historical experience of some Western countries, suggests that fertility is an outcome of economic rather than biological process. This notion has been considered a longstanding one by Notestein (1945), and Davis (1950). Couples control fertility through various measures (delay of marriage, coitus interruptus and contraception) and view many children as an economic burden and a barrier to material and social advancement. Leibenstein (1957) complains that it is not possible to deduce from this sort of theory the set or sets of conditions necessary and sufficient to achieve secular fertility decline. He then proceeds to lay the groundwork for what has become known as the 'economic theory' of fertility. Leibenstein suggests that motivations with respect to family size are, to a large

extent, rational: "parents will want an extra child if the satisfactions to be derived from that child are greater than the 'costs' that are involved - where costs are to be interpreted rather broadly" (p.159). Leibenstein distinguishes between three types of utility to be derived from an additional child and two types of cost. The types of utility are 1) the utility to be derived from the child as 'consumption good', namely, as a source of personal pleasure to the parents; 2) the utility to be derived from the child as a productive agent, that is, the child's possible future contribution to family income; and 3) the utility to be derived from the prospective child as a potential source of security, either in old age or otherwise. The costs are twofold: direct costs in terms of current expenditures and indirect costs or opportunities foregone.

Although several variations of the economic theory can be seen in the literature, the basic core of the theory remains Leibenstein's. The important landmarks of development of this approach in past years have been papers by Becker (1960), Mincer (1962,1963), Easterlin (1969; 1975) and later papers by Leibenstein himself (1974;1975;1981).

Becker (1960) adopts Leibenstein's theory but diverges very little from it. Becker proposes an application of the economic theory of consumer behaviour to fertility. His work provids the basis for the 'new home economics' approach to fertility. Becker views children as an economic good and the demand for children as a family decision process whereby

households choose a family size that maximizes satisfaction, given the prices of commodities, tastes, and total income. In other words, the quantity of children demanded is a function of the prices of goods and services consumed and the level of income.

Mincer (1962,1963) has two important additions to the neoclassical model of fertility. First, he demonstrates that permanent, not current family income influences fertility decisions. He suggests that couples make family size decisions based on long term anticipation of wealth. Second, he argues that the prices faced by a couple in raising a child consist not only of market goods and services, but also of the opportunity costs for the wife (e.g., an increase in potential earnings), which tend to influence fertility positively by making more children affordable. This is known as 'income effect'. On the other hand, a rise in opportunity costs also tends to influence fertility negatively through its impact on the price of children (e.g. as the potential earnings of the wife rise, the costs of her time also increase). This is characterized as price or substitution effect.

The economic theory of fertility has been further developed in several respects. Lancaster (1965) integrates the economic theory of fertility into the new consumer theory. According to this theory it is not the children but 'child services' that provide utility to parents. Child services consist of at least two elements: the number of

children and the quality of children, an increase in both number and quality being able to raise utility, but at the same time numbers and qualities being more or less substitutable (Willis, 1973).

Schultz (1974) develops the theory further into an economic theory of the family, sometimes called a theory of household production and consumption. According to this theory, families behave in a rationally calculating way,that is, by optimizing the results attainable with the available resources. The resources of the family are the incomes of the individual family members, the accumulated wealth of the family, the time budgets of the family members. The outputs are the basic commodities consumed by family members as well as other satisfactions. This means that the families use their available time budget, the time of wife and husband, in order to produce monetary incomes (by engaging in earning activities), to produce goods in the household and to produce different kinds of family amenities, among others, children.

Other important improvements in the economic theory of fertility include work by Leibenstein (1974,1975), Easterlin (1969,1975), and Turchi (1975). Leibenstein's theory (1975) posits three determinants of fertility, which include, in addition to income, the status of the household and the economic environment in which the household finds itself (e.g., stages of economic development). In other words, his approach includes the effect of 'social influence groups'

(SIG's). According to him, family units fall into particular 'groups' defined by historical, socio-cultural and economic factors. The SIG into which they fall has an effect upon desired living standards, consumption patterns and family size. Thus, moving from one SIG to another may lower desired fertility, but increasing income within a given SIG may actually increase fertility.

Easterlin (1969,1975) suggests a 'synthesis approach' in an effort to integrate economic theories of fertility with those proposed by scholars outside of economics. His contributions are noteworthy. First, he stresses that "it is the potential income flow through time that is pertinent to household decision-making" (Easterlin, 1969, pp. 128-130). Secondly, he argues that tastes, rather than being ignored, as they are in the traditional microeconomic model, should be explicitly included as determinant of fertility. He suggests that background characteristics (e.g. religion, education, residence, family type and the like) operate through the variables of tastes for children and for other goods and services. Easterlin's final contribution is the idea that every family unit has a 'modal' expected income, given its members' income, education, age, and the like. Income in excess of this tends to result in higher fertility but may also alter tastes for other goods and decrease relatively the demand for children. Thus, Easterlin suggests that 'tastes' are a function of income, i.e. one's norm can change as one changes income groups. In his later work, on

the 'economic framework for fertility analysis', Easterlin (1978) has also argued for adding a third set of fertility determinants. According to him the determinants of fertility are seen as working through one or more of the following: 1) the demand for children--the number of surviving children parents would want if fertility regulations were costless; 2) the potential output of children --the number of surviving children parents would have if they did not deliberately limit fertility; and 3) the costs of fertility regulation--including both subjective (psychic) costs and objective costs (the time and money required to learn about and use specific techniques).

Turchi (1975b) develops a similar approach and argues that the reference group (socioeconomic) structures one's view of the cost of children. According to this framework, the major determinant of the level of fertility is the cost of parental time because "the largest single input into the child rearing process is parents' time" (Turchi, 1975b:75). Therefore, as the price of parental time increases, so does the cost of child rearing and other home production. A rise in the price of time leads parents to engage more in market activities and less in non-market home production activities (Willis, 1973; Ben-porath, 1973; Schultz, 1973). Income affects demand for children in a negative way across reference groups but in a positive way within reference groups. Espenshade (1972) makes a similar suggestion.

Namboodiri (1972) suggests a different approach for fertility analysis. According to him it is debatable whether or not fertility is a onetime decision made at marriage or at the beginning of child-bearing. He argues for a more sequential approach in which each parity birth is a function of a host of economic factors, but also of the outcomes of all past fertility decisions.

1.2.2 Sociological Approach

In their study of determinants of fertility, sociologists tend to focus on the constraining aspects of norms and the influence of group pressure. Major contributions to the development of a sociological theory of fertility include work by Davis and Blake (1956), Davis (1959), Freedman (1962) and others.

The Davis-Blake (1956) schema presents a framework for understanding the ways in which biological processes, social group factors and individual behaviour interact to produce an observed level of fertility. This schema has served as a starting point for the derivation and testing of various specific hypotheses by later researchers. They provide very useful classification of 'intermediate variables' that stand between social organization and social norms on the one hand and fertility on the other. These include variables such as intercourse, conception, and gestation. Bongaarts (1978) has attempted to provide estimates for this model.

Freedman (1962) suggests a somewhat more complex framework and argues that the Davis-Blake variables 'intermediate' between socially established 'norms' regulating fertility and the actual fertility outcome. His framework includes stratification variables such as occupation, income, and education, family structure variables, technological factors, non-family institutions and other characteristics of social and economic organizations. According to him social norms are assumed to play a dominant role in fertility decisions. Blake (1968) provides further support for this view. She argues that "economic issues are secondary to normative ones" (p. 16). For Blake, it is the social context of reproduction that determines fertility. Differences in family size between rich and poor, Catholic and non-Catholic, and other groups are attributed to basic dissimilarities in normative pressures. Other sociologists holding similar opinions are Ryder (1973), and Goldberg (1975).

Caldwell (1976, 1978) proposes a 'general theory' of fertility that is essentially sociological in nature. His fundamental thesis is that "fertility behaviour in both transitional and post-transitional societies is economically rational within the context of socially determined economic goals and within bounds largely set by biological and psychological factors" (1978, p.553).

The normative approaches discussed so far are micro in orientation since they examine the constraining aspects of

the larger social structure on individuals and groups. Role theory discussed in sociological literatures, on the other hand, takes the pattern of relationships among people in groups as the unit of analysis (Jackson,1972).

Family is the most important unit of analysis in fertility research for role theorists. Scanzoni (1975,1976) is one of the few researchers to study the impact of marital structure on fertility by looking at the joint role of husband and wife as a unit of analysis. He assumes that gender differentiation is a distributive system of costs and benefits. More specifically, he assumes that the structure of norms within the marriage makes the husband and wife assume task responsibilities (e.g., those dealing with housework, child care, and career) in return for individual and mutual gain in the form of economic, social and psychic rewards (Holter, 1970). The more modern and equal the relationship between husband and wife, the lower the desired and intended family size. According to Bagozzi and Van Loo (1978) "the outcome of any particular relationship in terms of family size, consumption of goods and services, marital satisfaction, and so on will depend on the unique interaction and exchanges that occur between husband and wife" (p. 220). They conclude that the normative structure of relationships within the family is the central determinant of family size.

1.2.3 Psychological Approach

Psychology is a science of behaviour with a focus on individual level processes and is therefore relevant to fertility, which is a result of individual behaviour. Some scholars are skeptical about the use of psychological variables and measures in fertility analysis. As one author expresses it, "significant relationships between psychological factors and fertility simply have not been found" and "perhaps such relationships do not exist" (Mauldin, 1965, p. 9). Evidence from the Indianapolis study (Kiser and Whelpton, 1958), the GAF study (Whelpton, Campbell, and Patterson, 1966) and the Princeton studies (Bumpass and Westoff, 1970) tends to support this skepticism.

However, Namboodiri (1972) argues that psychological factors 'mediate' between the structural factors and the fertility outcome. He admits that factors other than psychological characteristics may well be present in the causal nexus of fertility behaviour but goes on to suggest that many of these affect fertility through the psychological characteristics of individuals. Therefore, he insists, complete understanding of fertility behavior will be impossible unless and until the psychological variables involved are identified.

Fishbein (1972) proposes perhaps the simplest psychological theory of fertility. He argues that fertility is determined by intentions. An individual's intention to

perform a given behavior will be a function of one's attitude toward performing that behaviour and one's normative beliefs with respect to what others expect, weighted by the motivation to comply with those expectations. He further stresses that all other factors, including economic ones, affect fertility behavior through these attitudes and intentions.

Hoffman (1973) introduces the concept of 'value of children' in analyzing fertility behaviour. The 'value' of children in her scheme refers to a hypothetical net worth of children, with positive values (satisfactions) balanced against negative values (costs). She uses values and disvalues in the same way as benefits and costs.

Bagozzi and Van Loo (1980) suggest a social exchange theory for fertility analysis. This theory takes husband-and-wife exchange as the unit of analysis. The theory claims that fertility is an outcome of two broad social-psychological processes within the family unit. In the first the shared, socially constructed attitudes or tastes of household members influence family size. In the second, the social exchanges transpiring between husband and wife affect fertility. Social exchange is manifested within the family through power, conflict, decision-making and social influence. Social and economic variables are viewed as constraints on attitudes and the husband-wife interaction.

In sum, the economic theories persume that individuals think and behave in a rational, calculating way, comparing the necessary costs and the expected outcomes of their actions, uninfluenced by any exogenous considerations. The actual decision-making process itself is not explicitly modeled, but, rather, the household is assumed to maximize utility subject to time and budget constraints. Sociological theories, on the other hand, tend to emphasize the fact that individuals are governed in their actions and even in their beliefs and opinions by values and norms embedded in the culture of the surrounding society. Psychological theories begin with needs, motives, and other mental events of people and then model these as the primary antecedents of fertility.

The various approaches discussed so far include economic, social and psychological factors as major determinants of fertility. Biological factors, although not explicitly modeled, are considered to be proximate to the determinants of fertility. These factors may control fecundity or potential or actual output of children but are inevitably governed by sociocultural processes such as mating patterns, age at marriage, and numerous taboos, customs and social usages. Although fertility is a biological fact, social factors are a significant determinants of biological results. In other words, this 'supply contrained' phase can not be considered as a theory of fertility in its own right. The use of the term 'natural

fertility' remains mainly an analytic construct, not a theory or even an explanatory paradigm (Robinson and Harbison, 1980).

Despite the complexity and the magnitude of the work that has gone into developing an adequate theory of fertility, there is little consensus on a single theory that dominates all others. There is no unified body of explanatory factors that can be called a theory of fertility. Westoff et al.(1961) in reference to fertility theory write: "It soon became apparent, however, that there existed no single sociological or psychological theory that would encompass all the factors relevant to fertility. First and perhaps most significant is the fact that research into the social and psychological factors affecting fertility is still at a stage where the primary needs are for gaining more information.... Secondly, the level of fertility is a complex result of many events. The antecedents to these events can be approached from the perspective of several sciences" (p. 137). This opinion holds true to a considerable extent even today. Among both economists and social scientists there is a feeling that present theories do not capture, even in a heuristic manner, the most important elements in the process that determines fertility at either the household or societal level (Farooq and Simmons, 1985). Bulatao and Lee (1983) hold similar views with regard to the use of any particular framework in explaining fertility differentials. They suggest that it

would be of much greater scientific interest to concentrate on unravelling the specific relationships or linkages between variables and fertility decision-making processes. For example, one might explain a greater portion of variance in fertility by means of a variable like education, but if one does not know what education really means in this context and how it works on fertility, the gain in understanding may be negligible. In addition, models or explanatory systems are needed to address simultaneously various determinants and their interrelationships (Bulatao and Lee, 1983).

Therefore, in this thesis an attempt will be made to develop a causal model to study the determinants of fertility based on knowledge gained from various frameworks. The method used to test the causal model will overcome some of the problems faced by other researchers.

1.3 Trends in Canadian Fertility

In Canada, of the three basic components of population growth, fertility has been the most important component of population change in the past and is likely to be even more so in the future, as mortality stabilizes and immigration stabilizes or decreases. For example, from 1851 (when the population was approximately 2.4 million) to 1981 (25.5 million), roughly 11.1 million people immigrated to Canada and 7.5 million emigrated, for a net gain of roughly 3.6 million. During this same period there were about 31.5

million births and 13.8 million deaths, for a natural increase of approximately 17.7 million. Thus, fertility has been an important factor in the growth of the Canadian population.

Table 1.1 shows the historical trends in fertility for Canada. Fertility in Canada has been declining for more than a century, as has been the case in the United states and other developed countries. Canada's crude birth rate declined steadily from 1851 (50 per thousand) until the middle of the Great Depression in 1937 (20 per thousand). A similar trend emerges when we look into total and general fertility rates during this period. This decline is attributed to industrial and economic change in Canada (Balakrishnan et al., 1979). It is also noted that the drop in legitimate fertility as an important factor for this decline followed by variations in nuptiality and age structure (Henripin, 1972). In the 1940's and 1950's, Canada experienced the 'baby boom', which was marked by an increase in the birth rate to 28 per 1,000. This increase is related to changes in the age at marriage, economic upturn, and shorter birth intervals (Peterson, 1969). Increase in nuptiality accounts for three quarters of the rise in fertility observed between 1941 and 1951 (Henripin, 1972). The recent decline in Canada's crude birth rate began in 1957 with a sharp decline in 1959 (George and Romaniuk, 1971). Some have termed this drop as a 'baby bust' (Grindstaff, 1975) while others have interpreted it as

Table 1.1 Crude Birth, Total Fertility, and Gross Reproduction Rates

YEAR	CBR	TFR	GRR
1921	29.3	3,536	1.712
1926	24.7	3,357	1.628
1931	23.2	3,200	1.555
1936	20.3	2,696	1.310
1941	22.4	2,832	1.377
1946	27.2	3,374	1.640
1951	27.2	3,503	1.701
1956	28.0	3,858	1.874
1961	26.1	3,840	1.868
1966	19.4	2,813	1.369
1971	16.8	2,187	1.060
1976	15.7	1,825	.887
1981	15.3	1,704	.829
1982	15.1	1,694	.825
1983	15.0	1,680	.816
1984	15.0	1,686	.819
1985	14.8	1,669	.811

Source:

Statistics Canada, Vital statistics, 1974, vol.1 Ottawa:1976.
Statistics Canada, Vital statistics, Births and deaths. Cat. 84-204, Annual.

meaning that Canada is on the road to zero population growth (Kayani and Krishnan, 1973). By the year 1974 the crude birth rate reached an all-time low of 15 per 1,000. The factors associated with this large decline in birth rates are increasing age at marriage, economic difficulties, more effective contraception, abortion, and the changing role of women in all areas of Canadian society (Balakrishnan, et al., 1979). The factors associated with the current baby bust are identified by Romaniuk (1984). He notes, "Fewer people are marrying and those who marry do so later in life, and divorce more frequently than in the past. Unintended births have been considerably reduced as a result of availability of and the willingness to use, the highly effective modern contraceptive procedures and therapeutic abortion" (p. 114).

1.4 Rationale and Scope of the Thesis

Fertility in most of the developed countries is at an all-time low. Although it is true that the fertility levels of these countries have been 'low' since the 1920s, many have experienced further sharp declines over the past two decades. Such a decline will have important effects on many aspects of their social, cultural, and economic life. The trends, changes, determinants and consequences of fertility affect nearly all the institutional and organizational systems of a country. Fertility decisions, having macro level consequences, however, are made at an individual

level. In North America completed family size for most couples is the result of a conscious decision to control fertility.

In order to understand couples' fertility behaviour, one needs to know the constraints involved in making fertility decisions. As mentioned earlier, many scholars have developed different approaches to the study of this phenomenon. But, given the complex nature of human behaviour there is no single unified approach available for this purpose. Therefore, there is a need for a multidisciplinary approach to explain couples' fertility behaviour. In this thesis an attempt is made to develop and test a causal model based on information obtained from various disciplines.

In Canada, fertility has been an important component of population change for more than a century. Many researchers have studied the role of fertility in Canadian population growth. However, Canadian demographers have relied on census and vital statistics for their analysis instead of using fertility survey data. Even if fertility survey data are available, they are limited to certain areas or sub-populations of Canada (for e.g. Balakrishnan, et al., 1975; Carisse, 1964; Elahi, 1973; Henripin and Lapierre-Adamcyk, 1974; Krishnan and Krotki, 1976; Pool, 1975). The Canadian Fertility Survey (Balakrishnan et al., 1984) conducted in 1984 is the first survey of its kind. It covers a wide range of topics that allows researchers to test various hypotheses. Data from this survey are used in

this thesis to identify the determinants of fertility and to develop a causal model.

The major objectives of this thesis are twofold. First, it will examine the factors involved in fertility decision-making suggested by economic, sociopsychological, and biological frameworks as well as by the more traditional structural mode of analysis. Secondly, it will attempt to develop a causal model by integrating the knowledge gained from various approaches to studying the determinants of fertility in Canada. The rich Canadian Fertility Survey data used here permit the testing of various hypotheses explaining fertility behavior. Moreover, the computer programme (LISREL) used to test the causal model is highly flexible and allows the building of a model which is closer to the real world.

1.5 Outline of the Thesis

Chapter 2 deals with the review of empirical literature on the determinants of fertility in North America pertinent to the problem under study. In chapter 3, the research design of the Canadian Fertility Survey is discussed. This chapter also includes the operationalization of the concepts and techniques used in the data analysis. Chapter 4 examines the relationship between background factors and fertility as in the traditional structural mode of analysis. Chapters 5 and 6 examine the explanatory powe of economic, sociopsychological and biological frameworks with regard to

fertility differentials. Chapter 7 develops a causal model based on knowledge gained from a synthesis of different approaches to studying the relationship between fertility and other variables. Chapter 8 provides a summary of the thesis with conclusions, implications and suggestions for future research.

Chapter 2

REVIEW OF LITERATURE

Since the time fertility was first identified as an important component of population growth, interest in this area has grown rapidly in different parts of the world. To review the vast empirical literature on the determinants of fertility is beyond the scope of this thesis. In order to do this one would need an annotated bibliography such as Freedman's (1961,1975) or a work similar to Hawthorn's (1970). The intent here is to review the literature, derived from North American experience, that is relevant to the problem under study.

2.1 American Literature

More information is available on the fertility of the American population than on that of any other nation (Freedman, 1962). Most of this information has been obtained from a series of national surveys. Therefore, it seems appropriate to review briefly the findings relevant to the present study.

The first fertility study was conducted in Indianapolis in 1941. Data for the study were obtained from an adjusted sample of 1,444 'relatively fecund' couples with the following characteristics: husband and wife native white, both Protestant, both having finished at least the eighth grade, married during 1927-29, neither previously married, husband under 40 and wife under 30 at marriage, and both

residents of a large city most of the time since marriage (Kiser and Whelpton, 1953,1958).

The major objective of the study was to try to test twenty-three hypotheses concerning the relation of fertility planning and size of planned family to given social and psychological factors. Some of these findings are relevant to the present study. With regard to socioeconomic status it was found that 1) the higher the socio-economic status, the higher the proportion of couples practising contraception effectively and the larger the planned families; 2) the higher the feeling of economic insecurity, the smaller the planned families; 3) the stronger the liking for children, the higher the fertility among couples planning their fertility; and 4) the stronger the feeling that children restrict personal freedom, the lower the proportion of couples practising contraception effectively and the larger the planned family (Kiser and Whelpton, 1953; 1958).

The Princeton study was conducted in two phases. The first interview was conducted in 1959 and was based on a probability sample of 1,165 wives (Westoff, et al., 1961), and the second interview in 1960 included 905 wives (Westoff, et al., 1963). The sample taken for this study consisted of native-white couples, resident in large standard metropolitan areas, who had recently had a second birth and whose marital history had been uncomplicated by divorce, permanent separation by death or extensive pregnancy wastage. One of the major purposes of this study

was to investigate the factors determining whether or not the couple would have a third child. The reason for this focus was the fact that much of the higher fertility of the postwar period had resulted from the desire for more than two children. The major findings of this study are the following: 1) on the average Jewish couples practice more efficient contraception than do Protestants or Catholics; 2) the average length of the first two birth intervals has proved to be the strongest predictor of family size; 3) religious preference is the strongest of all major social characteristics in its influence on fertility. Catholic couples want the most and Jewish couples the fewest children, with Protestants in an intermediate position; and 4) fertility is negatively associated with the socioeconomic status of Protestants and positively related to the socioeconomic status of Catholics. Thus, as Westoff (1962) notes, it is useful to treat the religious groups separately in fertility analysis.

The Detroit studies of 1955 and 1958 emphasized the underlying differences in family activities that might provide the basis for differences in fertility associated with economic differences in the past. In contrast to the Princeton study this one included young married women (17-32) of all parities. The dependent variable was the expected number of children. The relevant findings of the Detroit studies are as follows: 1) for couples with small families (0-1 child), the variable with the greatest

association (.351) with the number of children wanted is the home-centered leisure of the wife; 2) for couples with three or more children, income (.105) and education (.194) show positive association with the expected number of children; and 3) for couples with small families, income (-.151) and education (.046) show opposite effects with the expected number of children (Goldberg, 1958). The major contribution of the Detroit study lies in integrating family size preferences and expectations within the framework of an analysis of family roles rather than focusing only on traditional sturctural differentials.

In contrast to the analytical studies discussed above, the Growth of American Families studies (GAF) focus mainly on describing the distribution of certain fertility variables for the United States as a whole, demonstrating how they differ for certain important subgroups of the population, and tracing their changes over time. The GAF studies of 1955 and 1960 were the first nationwide studies of factors affecting the control of fertility in the United States.

The first Growth of American Families study (GAFI, 1955) included a sample of married white women aged 18-39 living with their husbands present or temporarily absent due to military service (Freedman, et al., 1959). In the 1960 Growth of American Family study (GAFII) the sample included non-whites. The findings from GAF relevant to this study are the following: 1) religion was closely related to the

fertility of white wives; 2) educational attainment has no significant influence on fertility, but showed stronger association in the ability to control fertility; and 3) the wife's work experience was inversely related to fertility (Whelpton et.al, 1966).

The National Fertility studies of 1965 and 1970 covered the whole nation. The sample size (5,617) was larger and the sampling criteria less restrictive than those of the earlier studies (Ryder and Westoff, 1971). The results from these surveys are summarized by Westoff (1975): 1) the age at marriage showed strong negative association with wanted and unwanted fertility, holding the duration of marriage constant; 2) a strong negative association existed between education and both wanted and unwanted fertility; 3) the 1970 NFS data provided no support for the hypothesis that income has a positive relation with fertility; and 4) "The hypothesis of competition between child-bearing and non-familial roles is supported by the finding that sex-role traditionlism is positively correlated with wanted fertility, (among whites only, however)" (p. 578).

2.2 Canadian Literature

Canadian fertility patterns, trends and differentials have been well documented. The existing data on fertility have been explored to a greater extent (Veevers, 1983). Because of the lack of quality fertility survey data, Canadian demographers have relied heavily on census and

vital statistics reports for their analyses of fertility patterns. The public user sample data from Canadian census have enabled fertility analysts to study fertility in the context of families and households, to examine the socioeconomic and lifestyle correlates of child bearing and to examine cohort shifts is fertility determinants (Balakrishnan, et al., 1979; Lapirre-Adamcyk, 1979). Many studies have focused on French-English differences in fertility (Beaujot, 1978; Henripin, 1972; Henripin and Legare, 1971; Legare, 1974). Fewer have emphasized the fertility of native people (Romaniuk, 1981; Romaniuk and Piche, 1972), regional differences in fertility (Balakrishnan et al., 1979; Henripin, 1972 ; Kalbach and McVey, 1979; Trovato and Halli, 1983), urban-rural fertility differentials (Lapierre-Adamcyk, 1979; Trovato and Grindstaff, 1980), other ethnic differences in fertility (Beaujot, 1975; Beaujot et al., 1978,1982), and the relationship between sex roles and fertility (Turner and Simmons, 1977). In contrast to the United States, only three regional (Balakrishnan et al., 1975; Henripin and Lapierre-Adamcyk, 1974; Krishnan and Krotki, 1976) and one national (Balakrishnan et al., 1985) fertility surveys have been conducted in Canada. A small scale survey in an eastern city (Elahi, 1973) also includes fertility related materials.

The Toronto fertility survey was designed to study the attitudes and behavior of married women in Metropolitan

Toronto concerning the past and prospective growth of their families (Balakrishnan, et al., 1975). The basic information was collected in January-March 1968 through interviews with 1,632 wives in their reproductive years and living with their husbands in metropolitan Toronto. The sample represented 81 percent of the eligible selected households. A multiple classification analysis of nine socioeconomic and demographic variables was conducted. The following findings are relevant to the present study: 1) Catholics have higher actual and expected fertility than Protestants; 2) the educational attainment of the wife has no clear inverse relationship to fertility; 3) income does not have any association with fertility; 4) the wife's labor force participation is the strongest predictor of current family size even when controlled for all other factors; 5) foreign-born women have lower fertility than native-born women; and 6) contraceptive use does not vary much by age or duration of marriage, indicating that in developed societies where high levels of contraceptive use exist, motivational differences may be expressed in the type of method used, rather than in use or non-use.

The Quebec fertility study was conducted in the province of Quebec in the summer and autumn of 1971. The sample consisted of 1,600 ever married women aged 15-65 (Henripin, 1972). The mean expected family size decreased by 24 percent between 1931 to 1951; and each generation of French married women expected more children than their

English counterparts.

The Growth of Alberta Families study (GAFS) was conducted in Edmonton, Alberta from 19 November 1973 to 15 February 1974. A total of 1,045 interviews were completed among women aged 18 to 54 with no specification regarding marital status (Krishnan and Krotki, 1976). The aim of the study was, among other things, to determine family size norms, contraceptive usage and failures, and the extent of unwanted pregnancies in different income groups and social categories. The particular focus of the Edmonton study was ethnic differentials in fertility behaviours and attitudes. It was found that ethnic groups differed widely in current and expected fertility. The Esterlin-Becker hypothesis of a positive correlation between income and fertility received slight support from the Irish respondents in Edmonton.

The other findings from GAFS relevant to the present study can be obtained from the work of Beaujot (1975) and McDaniel (1978). Beaujot (1975), using GAFS data, studied the differential fertility of social groups in Edmonton. He found that: 1) education, occupation and income had inverse relations with current family size on the total of all ethnic groups; 2) the level of living had a U-shaped relation to fertility with lowest fertility at intermediate levels of living; 3) items reflecting an emphasis on the childbearing role, as contrasted with the work role, were found to be positively related to fertility; 4) direct costs of children, measured as the extent of intended

post-secondary support, were negatively related to fertility; and 5) opportunity cost or index of indirect costs, measured by the implied work years lost, did not show the expected negative relationship.

McDaniel's study (1978), based on GAFS data, further examined the family size expectations in Edmonton. Some of her findings are same as those of Beaujot (1975); therefore, the focus here will be on findings not discussed earlier but relevant to the present thesis: 1) no clear relationship emerged between relative income position and fertility; 2) low feelings of financial success were related to higher fertility aspiration; 3) ownership of high status items (consumer durables) was negatively related to fertility expectations; 4) implied work years lost through childbearing were found to have a direct relationship with expected family size; 5) egalitarian attitudes were negatively related to anticipated family size; 6) direct relationships were found between fertility preferences and mother role orientation, and 7) in general, sociological variables were found to be far less important than economic considerations in explaining variation in family size preferences.

Chapter 3

DATA AND METHODOLOGY

The data for this thesis come from the Canadian Fertility Survey (CFS), which was conducted from April to June of 1984. The target population was women of all marital statuses in their reproductive years of 18-49, who were accessible by means of a residential telephone number and able to converse over the phone in either French or English. The survey was carried out using centralized telephone interviews, with a random sampling of the population chosen according to a two-stage probability selection process. The first stage involved the selection of households through the random generation of telephone numbers. The second stage involved the choice of eligible respondents (women aged 18-49) in each selected household. The detailed methodological aspect of the survey is given in a report by Trembley and Trudel (1984); therefore, only a brief summary is presented here.

The telephone sample was obtained by means of a computerized generation of random numbers, a procedure which was developed by the Survey Research Center, at the University of Montreal in 1979. A total of 22,169 telephone numbers were dialed randomly. The selection of a respondent from within households meeting survey criteria was also carried out by computer.

About 125 interviewers participated in the survey across Canada, and they underwent a training session that

lasted an average of two days. The selected households were contacted by the interviewers from five Canadian cities: Montreal, Toronto, Regina, Edmonton, and Vancouver. The interviews were conducted in either English or French.

The initial screening took place for all the 22,169 telephone numbers. Once contact was made, the interviewer verified with the person who answered the phone that the number dialed was in fact the number on the label. If the number was valid, the interviewer introduced the survey and estimated the number of men and women aged 18 or over residing at that telephone number. The second step was to identify the telephone numbers of potentially eligible private homes from other commercial or institutional numbers. The final step was to select an eligible person for the interview according to the criteria outlined in the survey. If more than one eligible person was found, the interviewer used the selection grid to select the respondent.

Out of 22,169 random dialings 13,642 were identified as residential numbers, a productivity rate (13,642/22,169) of 61.5 percent. The number of households having an eligible respondent (7,574) resulted in 5,315 completed interviews, a response rate (5,315/7,574) of 70 percent (Trembley and Trudel, 1984). This percentage is slightly lower than that found in face-to-face surveys dealing with similar subjects. For example, the non-response rate was 17.5 percent in the Toronto survey (Balakrishnan, et al., 1978:8); 21 percent in

the Quebec survey (Henripin and Lapierre-Adamcyk, 1974:147); and 29 percent in the Growth of Alberta Families Study (Krishnan and Krotki, 1976:2-3). The sample yield (5,315/22,169) for the Canadian Fertility Survey was 24 percent.

Since the entire interview was conducted on the telephone, the complexity and length of the questionnaire had to be reduced (Balakrishnan, et al., 1985). No information on sensitive topics such as current sexual activity was collected. Nevertheless, the survey was able to collect information on most of the standard topics covered in fertility surveys, such as contraceptive practice, birth histories, attitudes toward marriage, abortion, employment history and family economic status. The average interview lasted 36 minutes. The completed interviews were weighted by using three components: a basic weighting factor, a factor compensating for non-responses and an age/province factor.

In order to validate whether or not the 5,315 women surveyed constitute a nationally representative sample of the population of Canadian women aged 18-49, feasible comparisons are made on the distribution of selected variables between the 1984 survey and the 1981 census of Canada. In such comparisons, attention must be given to the various constraints involved. For example, with regard to target population, the 1984 survey excludes women who did not have a telephone, who did not live in private households, or did not speak either French or English,

whereas the census includes all women. With regard to time frame, the survey was carried out three years after the June 1981 census. In addition, the definition and classification of variables in the survey and census require reasonable adjustment prior to comparison.

Comparison with the 1981 Canadian census on variables such as number of children ever born and mother tongue yielded satisfactory results (Trembley and Trudel, 1984). Table 3.1 presents the comparisons between the 1984 survey and the most accessible and easily comparable data in the 1981 census. The age distribution indicates a general agreement between the survey and census. With regard to marital status the survey underestimates singles and overestimates the married; the differences in the other two categories are negligible. The survey includes more Protestants than Catholics, and once again the difference is not highly significant. The distribution for nativity and ethnicity shows markable differences between the survey and the census. The survey overestimates the native-born and underestimates the foriegn-born. The sample underestimates the two major ethnic groups, the British and the French. However, the relative difference for these two groups is about 10 percentage points between the survey and the census. On the whole, the sample underestimates four of seven ethnic groups. Although the representativeness of the sample is questionable based on the comparisons of some of the above variables, the pattern of the distribution of

Table 3.1 Comparison of distribution on selected variables between 1984 Survey and 1981 Census

Variable	1984 Survey No. (1)	1984 Survey Percent (2)	1981 Census No. (3)	1981 Census Percent (4)	Difference (2-4)
Age:					
18-19	380	7.1	466,810	8.0	-0.9
20-24	1,026	19.3	1,165,995	20.0	-0.7
25-29	1,000	18.8	1,089,370	18.7	+0.1
30-34	911	17.1	1,013,990	17.4	-0.3
35-39	813	15.3	805,840	13.8	+1.5
40-44	639	12.0	661,670	11.4	+0.6
45-49	548	10.3	619,370	10.6	-0.3
Total	5,315		5,823,045		
Marital Status:					
Single	1,159	21.8	1,459,050	25.1	-3.3
Married	3,869	72.8[1]	4,097,660	70.4[1]	+2.4
Divorced	218	4.1	206,790	3.5	+0.6
Widowed	69	1.3	59,545	1.0	+0.3
Total	5,315		5,823,045		
Religion:[2]					
Protestant	1,603	36.5	1,701,820	35.9	+0.6
Catholic	2,152	49.0	2,370,525	50.0	-1.0
Others	627	14.3	668,090	14.1	+0.2
DK and NA	8	0.2			
Total	4,389		4,740,435		
Nativity:[2]					
Native born	3,796	86.5	3,905,539	82.4	+4.1
Foreign born	593	13.5	831,346	17.6	-4.1
Total	4,389		4,740,435		

cont...

Ethnicity:[2]					
French	1,019	23.2	1,345,870	28.4	-5.2
British	1,171	26.7	1,835,370	38.7[3]	-3.8
Irish	360	8.2			
German	272	6.2	227,715	4.8	+1.4
Other W.E	614	14.0	764,065	16.1	-2.1
Ukranian	110	2.5	100,230	2.1	+0.4
Other E.E	175	4.0	134,430	2.8	+1.2
Others	233	5.3	332,755	7.0	-1.7
DK and NA	436	9.9			
Total	4,389		4,740,435		

Notes:
1. Includes common-law and separated.
2. Sample size is reduced for religion, nativity, and ethnicity due to inclusion of only women between ages of 20-44. Religion and ethnicity include Yukon and North West Territories.
3. Includes Irish

Sources:
Canada, Statistics Canada
1982 1981 Census of Canada. Cat. Nos. 92-901, 92-911, 92-912, 92-913.

these selected variables supports the sample's representativeness. The sample for the present study includes married and common-law women.

3.1 Variables and their Measurement

The primary dependent variables used in this thesis are current and expected family size. Current family size is simply the respondents' total number of live births. Although it could be argued that pregnancies not resulting in live births are bound to make a difference in current family size, the literature tends to indicate that pregnancy wastages are poorly reported (Bumpass and Westoff, 1970:133-134; Ryder, 1973: 500-501). Therefore, this analysis will limit itself to effective fertility.

The second dependent variable is expected family size, which is the number of live births plus additional births expected. This measure poses a number of problems. The literature shows that expected family size is a good predictor of completed fertility in the aggregate but a poor predictor when individual women are considered separately. The Princeton and Detroit studies report changes in individuals' expected family size over a period of time (Bumpass and Westoff, 1970:21-22; Goldberg, et al., 1959:376). Blake (1974) doubts the data on expected family size in the United States. She suspects that public opinion may have a strong influence on individuals' responses. Goldberg (1975), on the other hand, argues that the

expectation data "place the independent and dependent variables in proper time perspective ... [and] have a greater real world base than questions with family size ideals or desires that contain substantial elements of fantasy, probably differing in form from one respondent to the next" (p. 94). In essence, expected family size in a cross-sectional survey contains retrospective information; that is, younger and older respondents report the total number of children they plan to have (in addition to the number of surviving children). Therefore, any observed difference in fertility among the respondents within the reproductive age can be attributed to various socioeconomic and psychological factors. Westoff and Westoff (1971) suggest that the number of children expected remains the best estimate of the actual numbers the women will ultimately have.

The two measures, current and expected family size, are bound to be influenced by age, particularly current family size (Table 3.2). Therefore, this analysis has removed the age effect. This has been done by measuring each women's fertility as the deviation from the mean for her age. Thus, the effect of age is systematically removed from the fertility measures, called current and expected family size 'net age'.

The independent variables used in this thesis can be classified under background, economic, sociopsychological and biological variables. The rationale for inclusion of

Table 3.2 Unadjusted deviations of current and expected family size by respondent's age.

		CURRENT		EXPECTED	
	N	Cell mean	Unadj. dev	Cell mean	Unadj. dev
18-19	34	.59	-1.39	2.51	.08
20-24	344	.85	-1.13	2.39	-.04
25-29	692	1.39	-.58	2.33	-.09
30-34	698	1.86	-.11	2.16	-.27
35-39	661	2.13	.15	2.22	-.21
40-44	529	2.63	.65	2.65	.22
45-49	428	3.10	1.12	3.10	.67
Total		1.98		2.43	

these variables stems directly from the theoretical and empirical literature reviews. Many of these variables are also selected with an intention to develop a causal model at a later stage.

The following section presents the source and description of the variables used in this study. The question or questions (Appendix D) corresponding to a particular variable are given in parentheses.

A. Background/Structural Variables

a. Respondent's religion (RELIGION:Q117)

1. Protestant: includes Anglican,Baptist, Lutheran, Mennonite, Pentecostal, Presbyterian, and United Church.
2. Catholic(and Orthodox): includes Greek Orthodox, Roman Catholic and Ukrainian Catholic.
3. Others: includes Jewish, Other and None.

b. Respondent's ethnicity (ETHNIC:Q116)

1. French
2. British: includes English, Scottish and Welsh
3. Irish
4. German
5. Other W.E
6. Ukrainian
7. Other E.E
8. Others

c. Residence in youth (RESIDENC:Q111)

1. Rural area
2. Small city
3. Big city

d. Nativity (NATIVITY:Q102,Q104,Q105)

1. Native-born
2. Foreign-born

e. Women's education (WEDUC:Q112)

1. 0-8 years

2. 9-12 years
3. 13-15 years
4. 16+ years

f. Women's income (WINCOME:Q737,Q744,Q746)

1. ≤ 7000
2. 7100-12000
3. 12100-19000
4. 19100 +
5. Missing

g. Family income (FINCOME:Q917)

1. ≤ 25000
2. 25100-35000
3. 35100-49000
4. 49,300 +
5. Missing

B. Economic variables:

In addition to respondent's education (WEDUC),income (WINCOME) and family income(FINCOME) the following variables will be considered under this heading.

a. Husband's education (HEDUC:Q902)

1. 0-8 years
2. 9-12 years
3. 13-15 years
4. 16+ years

b. Husband's income (HINCOME:Q916)

1. ≤ 19000
2. 19100-26000
3. 26100-35000
4. 35100+
5. Missing

c. Feeling of financial success(FSUCCESS:Q800)

1. Not been very successful
2. Reasonably successful
3. Very successful

d. Financial plan for the future(FNCLPLAN:Q801)

1. Never
2. Rarely
3. Occasionally
4. Most of the time

e. Savings for the future (SAVING:Q803,Q804,Q805)

1. Never
2. Time to time
3. Regular basis

f. Standard of living compared to others(STDLIVE:Q915)

1. Better
2. The same
3. Worse

g. Number of work interruptions (INTERUPT)

1. Ever worked
2. 1-2 times
3. 3-9 times
4. Never worked

C. Sociopsychological Variables

a. Sharing household chores(SHARCOOK,HOUSWORK,CHLDCARE, CCLOTHES,SCHLWORK:Q702)

1. Always you
2. Mostly you
3. Equally
4. Mainly partner

b. Making money decisions (DECISION:Q910)

1. Mainly women
2. Equally shared
3. Mostly partner

c. Children distance the spouses (DISTANCE:Q217b)

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly agree

d. Parenting means heavy responsibility (BURDEN:Q217C)

--codes same as Q217b-

e. Child provides goal in life (GOAL:Q217a)

--codes same as Q217b-

f. Child provides source of affection(AFFECTIN:Q217d)

--codes same as Q217b-

g. Children reduce work opportunities outside home (OPCOST:Q751)

1. Not at all
2. Not very much
3. Fair amount
4. A lot

D. Biological variables

a. Use of contraceptives in planning fertility(FPLAN)

b. First birth interval in years (INTERVAL)

c. Duration of marriage in years (DURMAR)

3.2 Method of Analysis

The independent variables used in this thesis are measured by nominal, ordinal and interval scales. The prime concern is with the assessment of the relative importance of these variables proposed under various approaches and the development of a causal model explaining fertility. Keeping these objectives in mind, three methods are adopted here to analyse the data. They are Multiple Classification Analysis (MCA), Analysis of Linear Structural Relationships and Multiple Regression Analysis. Although these techniques have been used extensively by researchers, the latter in particular, we will briefly discuss the first two.

Since many of the independent variables used in the thesis are nominal or ordinal, the use of MCA is most appropriate. This technique is described in greater detail in a text by Andrew et al. (1973). Researchers tend to substitute this technique for regression analysis. Basically, this is an extension of multiple regression

analysis to situations where the independent variables can be in either subclasses or discontinuous variables. MCA can be viewed as a blend of n-way analysis of variance and multiple regression with dummy variables. An advantage of MCA is that no assumption about linearity of the subclasses is required. Over multiple regression with dummy variables, MCA has the advantage of expressing each category subclass of an independent variable as a deviation from the grand mean; in addition, it also provides mean values adjusted for all other variables in the model as well as standardized beta coefficients and multiple correlation coefficients, as in regression.

However, MCA is not without limitations. Though its assumptions are less rigid compared to regression, it is still basically an additive model and ignores interactions unless specifically introduced. High multicolinearity may distort the results to some extent. It is also sensitive to a number of categories and sample sizes; therefore, one has to be cautious in handling variables where non-response categories are high.

Pelz (cited in Sonquist, 1970) describes the Multiple Classification Analysis technique as follows:

"Multiple Classification Analysis asseses how several predictive factors simultaneously determine a dependent variable. As in conventional analysis of variance , from which it is adapted, the program accepts a series of categorical independent variables (predictors), and one

dependent variable (criterion). As in the analysis of variance, the model assumed is that each person's criterion score is composed of a series of additive coefficients, or main effects (deviations from the grand mean), corresponding to the particular category or class in which he stands on each predictor. Let a_i =the coefficient corresponding to the ith category of the predictor A; let b_j = the coefficient corresponding to the jth category of predictor B, etc. : e_{ijk} = a random error term, Y_{ijk} = the observed score of a particular individual who falls in the ith category of A, and jth category of B, etc. It is then assumed that $Y_{ijk} = y + a_i + b_j + \ldots + e_{ijk}$. The problem is to find a set of values for a_i, b_j, etc., which, when introduced into this model reproduce the observed scores with a minimum of error (by least squares criteria)" (p. 71).

The use of the next method, Analysis of Linear Structural Relationships (LISREL), is to satisfy the second objective of the thesis, i.e. to model the determinants of fertility. LISREL, a computer program developed by Joreskog (1973,1977,1978) is used in modeling causal relationships between the variables through latent concepts. LISREL consists of the structural equation model and the measurement model. The structural equation model describes the theoretical causal relationships among the latent variables through a set of general linear equations. The measurement model, on the other hand, describes the measurement of the latent variables by the observable

indicator variables and allows for evaluation of the reliability of such measures. The structural equations and estimation procedures will be discussed in detail in chapter 7.

Once the proposed causal model is fitted for the sample population, it will also be tested for sub-groups, such as ethnicity, religion, region etc. through multiple regression analysis. This approach is taken because of the greater time expenditure and higher financial cost associated with using LISREL for subgroup analysis.

Chapter 4

STRUCTURAL FACTORS AND FERTILITY

Societies differ in group structural characteristics, such as ethnicity, religion, residence, education, occupation and income. Membership along these characteristics places people in distinct social groups with different motives, aspirations, family size ideals and desires, norms and abilities to control fertility (Grindstaff, 1981). Therefore, one way to locate the social factors important in determining variations and changes in population processes is to examine subgroup differences in these processes (Goldscheider, 1971). According to Ryder (1973) "Reproductive behaviour reflects the influence of norms within various contexts. Norms are properties of groups. Therefore, the understanding of reproductive behaviour requires the study of groups and their characteristics (including norms), rather than the study of individuals" (p. 505). To support this further, Goldscheider (1971) suggests that examination of structural differentials represents a fundamental way of locating determinants of causal factors involved in the processes under study. To him, the study of sub-group differentials could be seen as the first step in the formulation of a comprehensive explanatory theory.

Leridon (1982) writes, "Institutions such as families, schools or religious organizations have a natural tendency towards conservatism rather than liberalism or innovation. In fact, this is the very reason why they exist; how would

we imagine that parents, teachers or pastors would transmit to their children, pupils or flock something radically different from what they inherited from previous generations? Of course, each individual can express a judgement on the teachings he has received and adjust his personal behavior to this analysis; but the structures of any society exist basically to regulate and maintain, not to reform" (p. 303). Thus, the prevalence of any particular norm within a group not changing over the course of one's life may be seen as continuities of early childhood socialization pressures. Such social norms and pressures are important components of human decision-making. Namboodiri (1980) agrees that the individual is not free to ignore norms completely: "Norms are there to be adhered to, no matter what the price tag is" (p. 86).

Sociologists studying differential fertility have focused on normative influences because of their assumption that individual behaviour may often be the result of group pressure. As Blake (1968) points out, economic issues are secondary to normative ones; and if people from low socioeconomic positions have larger family sizes than the rich, it is because they are more strongly influenced than the latter by society-wide pronatalist norms. In other words, the perceptions parents have about the minimum resource inputs necessary for childbearing may be strongly influenced by normative pressures stemming from the couple's membership in occupational, educational, religious, or

ethnic groups (Turchi, 1975).

It is, therefore, traditional in demography and sociology to look first at differences arising from structural or background factors. Demographers have long recognized the theoretical inadequacy of most structural explanations (Vance, 1952). According to Turchi (1975b) "reliance solely upon normative arguments in the explanation of fertility differentials is clearly insufficient. Explanations of fertility differentials on the basis of membership in varying social, ethnic, and economic groups have been unimpressive statistically, and, overtime, those differentials which have been discovered have begun to disappear" (p. 14). Similar conclusions are reached by Blake (1966) and Jones and Westoff (1979).

However, a number of views exist concerning how group membership and fertility are related. The basic sociological notion is that behaviour is, to a large extent, a function of group membership, the persistence of subgroup norms which govern fertility (Lorimer,1954), the power of minority group status to determine reproductive behaviour (Halli, 1987; Johnson and Nishida, 1980; Long, 1970; Trovato and Burch, 1980) and the dominant group over subgroups (Jones and Westoff, 1979; Mosher and Hendershot, 1984).

In this thesis, in addition to studying differences in fertility due to background or structural factors, an attempt is also made to test for a characteristic hypothesis. The 'characteristic' approach hypothesizes that

the distinct fertility of subgroups merely reflects the matrix of social, demographic and economic attributes that characterizes these subgroups (Goldscheider, 1971:272). According to this hypothesis, fertility differentials between groups should disappear when various social, demographic and economic characteristics are statistically controlled. This hypothesis has been used by social demographers to study fertility differentials by race, religion, ethnicity, residence, region, etc. (Beaujot, 1975; Goldscheider, 1971; Goldscheider and Uhlenberg, 1969, Johnson et al., 1978; Ram, 1976; Sly, 1970; Trovato, 1981; Trovato and Burch, 1980; Trovato and Grindstaff, 1980; Trovato and Halli, 1983).

The variables under consideration here are those which have been used most frequently and successfully in describing fertility variations in other studies in Canada (eg. Balakrishnan, et al., 1979; Beaujot, et al., 1982; Henripin, 1972; McDaniel, 1978). The variables selected for the present study include ethnicity, religion, nativity, residence in youth, education and family income. These factors are seen by some authors (Easterlin, 1969; Hawthorn, 1970) as determinants of taste or preference.

The MCA analysis used in this thesis will also provide the effects of independent variables after the adjustments made for duration of marriage. The influence of duration of marriage on the dependent variable will be smaller since its influence is already captured in age. Even though the

dependent variables are already adjusted for age, the need for the adjustment for marital duration arises if the variation in this variable is substantial within a given age group across various socioeconomic groups. For example, marriage duration is likely to vary more for younger than for older cohorts of women and, therefore, it is useful to present results after the adjustment for duration of marriage.

Prior to discussing results from this study, it will be worthwhile to review some of the North American literature on differential fertility based on the selected background variables. Some of this material has already been discussed in previous sections.

In the United States, religion is a frequently mentioned factor in investigations into fertility differences. The Growth of American Families Surveys (Freedman et al., 1959; Whelpton et al., 1966) indicated the persistence of religious differences, even after controlling for variables such as education, income, farm background and place of residence. Although the first National Fertility Survey (Ryder and Westoff, 1965) supported such a finding, the second NFS (Westoff, 1975) indicated that these differences are declining in America. The Princeton study (Westoff et al., 1961), on the other hand, finds religious denomination the strongest and most consistent factor in influencing fertility.

Differences in fertility among residents of cities, suburbs, towns, rural areas and farms have long been cited as the major aspects of differential fertility. The 1960 GAF and the 1965 NFS provide somewhat less conclusive evidence: with the exception of rural farm residents, expected fertility by place of residence shows no clear pattern (Ryder and Westoff, 1971). Based his study on data from the Detroit sample, Goldberg (1959) presented evidence indicating that the observed inverse relation between socioeconomic variables and fertility in urban areas is primarily due to the fertility behaviour of rural migrants to the city. When samples were partitioned on the basis of generations, Goldberg found that among rural origin respondents who had resided for at least two generations in the city, the negative correlation between socioeconomic variables and fertility disappeared; a strong inverse relationship was noted among first generation respondents. Goldberg, however, finds that only education remains as a status variable capable of differentiating levels of fertility among second generation respondents. Similar results were found in the Indianapolis data (Goldberg, 1960). There was a relatively strong inverse relationship between socioeconomic variables and fertility among the farm migrants, but this relationship was absent among the urbanites. Freedman and Slesinger (1961), using the 1955 GAF data came to a similar conclusion.

Duncan (1965), from his analysis of 1962 Current Population Survey data, concluded that either of the two following characterististics is a sufficient condition for controlled fertility: two generations of non-farm residence, or attainment of high levels of schooling. Blau and Duncan tested the same hypotheses using a national sample in the framework of a social mobility survey (Duncan, 1964; Blau and Duncan, 1967). They concluded that couples with a farm background (educated in farm areas) had a higher fertility at each status level than couples with no farm background, but the difference diminished from the lower to the higher status groups. On the other hand, there was a negative correlation of fertility to socioeconomic status in both the non-farm and farm background groups. Therefore, Goldberg's thesis about different intake of farm immigrants with higher fertility was not supported. The interpretation given for this finding is that movement to non-farm residences from farm backgrounds is in a way a form of social and occupational mobility. Such a move is accompanied by a reduction of fertility. However, the amount of reduction is directly related to the degree of upward mobility in the non-farm sector.

With regard to education, in the United States the Indianapolis Survey demonstrated a slight positive relation between fertility and education among urban couples planning their fertility. The NFS, on the other hand, showed a weak negative relation of education to children ever born, as

well as desired and expected fertility. Exception to this generalization is that women having the highest education i.e. four years of college or more, displayed a slightly higher desired and expected number of children. Blake and Pinal (1982), drawing on an analysis of two larger data sets (five national fertility surveys and six national Gallup surveys), argue that the inverse relationship of education and actual fertility in the United States is not simply due to the enhanced availability of means of birth control to people of greater educational attainment. The more educated the individual the less likely he or she is to value a large family. Further, they report that the effects of education on family-size preferences are not entirely due to other associated characteristics, such as race, income, occupation, or community size. The relationship between education and fertility preferences remained even after being controlled for other background factors. Blake and Pinal also report the presence of education-religious affiliation interaction observed in other studies (Freedman et al., 1959; Westoff et al., 1961; Whelpton et al., 1966; Westoff et al., 1963).

American fertility surveys have also dealt with the relationship of income to fertility. The Indianapolis survey (Kiser and Whelpton, 1953) showed a negative relation of fertility to income, with a slight rise in the fertility of the highest income group as compared to the second highest. Goldberg (1960) and Duncan (1965), however, in reanalyzing

the results found a clear positive correlation of fertility to income, if the couples with farm background were removed. The Princeton survey (Westoff et al., 1961; 1963) showed positive relationship between income and fertility among Catholics, but a less clear relationship in the case of Protestants and Jews. The GAF and NFS studies showed no consistent relationship between income and fertility. The Catholics, both in 1960 and 1965, showed a U-shaped relationship, while in the case of Protestants the relationship was almost zero in 1960 and negative in 1965. Freedman (1963) reanalyzed the data of the GAF by taking into consideration the following economic variables: husband's absolute and relative incomes, wife's income, years the wife has worked since marriage, wife's labour force status, and wife's future work expectations. She analysed the couples separately according to duration of marriage. Couples married 5-9 years showed no significant correlation of absolute or relative income to fertility but showed a weak negative correlation with absolute income and a positive correlation with relative income among couples married few or more years. The correlations did not change even after controlling for other sociodemographic variables. A similar observation was made by Freedman (1966) based on the analysis of Detroit Areas Studies.

Some Canadian studies have examined fertility differentials similar to those of the United States. The studies indicate that Catholics have higher fertility than

Protestants (Balakrishnan et al., 1975; Beaujot, 1975; Charles, 1948; Henripin, 1968). Long's study (1970), based on the 1961 census marital fertility, shows that religious differentials in Canada are decreasing and that the effect of religion is weakened or strengthened by ethnic and other group influences. Krotki and Lapierre's study (1968), based on 1961 census, showed that the population with the same denomination but different ethnic background show different levels of fertility. They have also noted that British Catholics have more children than French; the reverse is true for non-Catholics. Groups with either one of the two characteristics (French or Catholic) have higher fertility than others. Balakrishnan et al. (1979) in their 1971 census analysis indicate that religion is a significant factor in explaining fertility differentials but even more so for older women in comparison to women under thirty. They also observed the narrowing of the differences among the various religious groups.

Henripin (1972) analyzed 1961 Canadian census data and found that among younger cohorts of women aged 15 to 24, rural residents had higher birth rates than urban women in the same age category, but the difference was slight. Among older respondents, the gap between rural and urban fertility increased linearly with age. Balakrishnan et al. (1979) based on 1971 census analysis concluded that type of residence has significant influence on fertility even after controlling for other variables. However, according to

Collishaw (1976) fertility is declining in urban and rural populations, and the gap in level of reproduction by residence has narrowed considerably, particularly among the younger ages. Beaujot (1975) showed no significant influences of residence on fertility.

In general, the Canadian studies show significant inverse relationship between education and fertility (Balakrishnan et al., 1979; Beaujot, 1975; Charles, 1948; Henripin, 1972). Ethnicity is another important variable used in fertility analysis. Balakrishnan et al.(1979) show that the average number of children is higher for the British group, followed by French and other Europeans. Beaujot (1975) drawing on the Edmonton sample, reports the current family size is higher for French than British. The latter two studies also report that foreign-born women have fewer children than women born in Canada. No consistent relationship is observed between income and fertility in Canadian studies.

4.1 Bivariate Analysis of Structural Factors

Table 4.1 presents the bivariate relationship of current family size with structural factors. The analysis of expected family size revealed similar results and is therefore not discussed here.

Based on the eta values from the table, it is clear that women's education (.21) is an important factor in explaining variation in current family size, followed by

Table 4.1 Current family size(net age) by structural factors. Unadjusted and adjusted deviations by marriage duration.

Var.category	N	Class mean	Unadj. dev.	Adj. DURMAR	Eta	sig of F
Religion	(Grand mean=.05)					
1. Protestant	1325	.04	-.01	-.02	.04	.041
2. Catholic	1617	.09	.04	.04		
3. Others	437	-.08	-.12	-.10		
Ethnicity	(Grand mean=.03)					
1. French	761	.06	.03	.03	.09	.002
2. British	946	.01	-.03	-.04		
3. Irish	288	.07	.04	.03		
4. German	223	.04	.00	.00		
5. Other W.E	471	.18	.15	.15		
6. Ukrainian	76	-.29	-.32	-.30		
7. Other E.E	120	-.29	-.32	-.30		
8. Others	175	-.05	-.08	-.05		
Nativity	(Grand mean=.05)					
0. Foreign-born	539	-.10	-.19	-.21	.07	.000
1. Native-born	2844	.06	.04	.04		
Residence	(Grand mean=.05)					
1. Rural	1042	.21	.16	.15	.11	.000
2. Small city	1153	.06	.01	.01		
3. Big city	1166	-.11	-.16	-.14		
Women's education	(Grand mean=.05)					
1. 0-8 years	308	.60	.56	.48	.21	.000
2. 9-12 years	1672	.17	.12	.11		
3. 13-15 years	925	-.13	-.18	-.16		
4. 16 + years	477	-.38	-.42	-.40		
Family income	(Grand mean=.04)					
1. LE 25000	636	.31	.26	.30	.17	.000
2. 25100-35000	685	.11	.06	.08		
3. 35100-49000	660	-.06	-.11	-.10		
4. 49300+	678	-.29	-.34	-.36		
5. Missing	728	.18	.13	.09		

* Eta is the square root of the ratio of the sum of squares based on the unadjusted deviation for predictor to total sum of squares. It is the correlation ratio and indicates the capacity of the predictor variable to explain variation in the dependent variable.

family income (.17), residence in youth (.11), ethnicity(.09), nativity (.07) and religion(.04). All these variables show significant relationship with fertility.

As can be seen from table 4.1, religion does not have a very large influence on current family size. The ranges for unadjusted and adjusted deviations are .16 and .14 respectively. It is seen that the unadjusted means are largely unchanged even after being adjusted for marriage duration. As expected, the mean number of children is lower for Protestants and 'others', than for Catholics. However, the differences between Protestants and Catholics are relatively smaller.

The respondent's ethnicity also exercises very little influence on fertility. The range is .47 for the unadjusted means. The observed differences among ethnic groups are not particularly large or larger than those observed by others (for example Balakrishnan et al., 1975; Beaujot, 1975). The mean number of children is lower for four of the ethnic groups, particularly among the Eastern Europeans. However, the deviation from the grand mean is much smaller for the Western Europeans in comparison to Eastern Europeans. These differences hold true even when adjustments are made for duration of marriage. The fertility differentials between British and French are smaller, in contrast to larger differentials reported in earlier studies.

The influence of nativity on fertility is as expected: foreign-born women have a lower number of children than

native-born women. According to Balakrishnan et al. (1979) such a differential is mainly due to the fact that large numbers of immigrants come from European countries, where fertility is lower than in Canada. The fertility is lower even among non-European immigrants because of selectivity according to education and other socioeconomic and demographic factors.

Variables such as residence in youth, women's education and family income show the expected inverse relationship with fertility. These relationships do not change even after adjustments are made for duration of marriage. The only exception is a sizable reduction (.56 -.48=.08) in fertility for women with 0-8 years of education.

In sum, the findings from bivariate analysis suggest that education and income continue to play important roles in explaining fertility behaviour. The fertility differentials by religion and ethnicity are smaller, while those for nativity and residence appear to be intermediate.

4.2 Multivariate Analysis of Structural Factors

This section intends to examine the influence of structural factors when adjusted for other factors. The adjusted MCA coefficients will be meaningless if interaction is present. Therefore, we need first to test for interaction among the variables.

Table 4.2 presents the results from MCA analysis for all the background factors. The analysis indicates

Table 4.2 Current family size(net age) by structural factors. Unadjusted and adjusted deviations by independent variables and marriage duration (DURMAR).

Var.category	N	Unadj. dev	Adj. for indep	Adj. for indep & DURMAR	Beta	Sig of F
		(Grand mean = .04)				
Religion						
1. Protestant	1223	.00	-.01	-.02	.02	.814
2. Catholic	1414	.04	.02	.02		
3. Others	412	-.11	-.02	-.01		
Ethnicity						
1. French	761	.02	-.11	-.11	.09	.001
2. British	937	-.02	.03	.02		
3. Irish	286	.04	.03	.02		
4. German	220	.00	.00	.01		
5. Other W.E	472	.15	.18	.19		
6. Ukranian	76	-.33	-.29	-.28		
7. Other E.E	122	-.31	-.22	-.21		
8. Others	174	-.09	.08	.10		
Nativity						
0. Foreign-born	515	-.18	-.17	-.19	.07	.001
1. Native-born	2534	.04	.03	.04		
Residence						
1. Rural	929	.15	.10	.09	.05	.005
2. Small city	1042	.02	-.02	-.01		
3. Big city	1077	-.14	-.07	-.07		
Women's education						
1. 0-8 years	263	.56	.47	.36	.14	.000
2. 9-12 years	1477	.13	.10	.09		
3. 13-15 years	856	-.17	-.15	-.12		
4. 16 + years	453	-.42	-.31	-.27		
Family income						
1. LE 25000	549	.26	.19	.23	.13	.000
2. 25100-35000	609	.09	.05	.07		
3. 35100-49000	593	-.09	-.06	-.06		
4. 49300+	646	-.33	-.22	-.25		
5. Missing	653	.11	.07	.05		

* Beta measures the relative importance of various predictors in their explanation of the dependent variable, if all other predictors are held constant.

significant interaction of ethnicity with religion, residence, and women's education, and religion with nativity and women's education. In situations of interaction the explanatory power of any single variable cannot be determined. This problem will be handled a little later.

Table 4.2 clearly indicates that religion does not have any significant influence on fertility. When controlled for other factors, the adjusted means, although not meaningful, show that French women are likely to have fewer children than British women and 'others'. No major changes in the direction of variable influence are observed. The magnitude of the effects, however, does change during the course of adjustment. The beta coefficients indicate that women's education is the most important factor in explaining fertility behaviour, followed by family income, ethnicity, nativity, and residence.

Since interactions are present, a different approach must be taken to understand the explanatory power of the structural factors. The approach taken here is a regression decomposition model developed by Coleman et al. (1972). This approach is particularly useful in testing any competing hypotheses. In the present study the purpose is to examine the relevance of structural explanations to fertility analysis. The variables of ethnicity and religion are combined in the analysis for a number of reasons. First, in addition to their own interaction, they also interact with other variables. Secondly, studies report that ethnicity and

religion jointly explain greater variation in fertility (for example, Balakrishnan et al., 1979; Krotki and Lapierre, 1968; Long, 1970). Therefore, it would be beneficial to study fertility differentials in ethno-religious groups in the light of other background variables. It is possible from the procedure adopted here to decompose the observed ethno-religious differentials and to state how far the structural explanations hold true.

According to Coleman et al. (1972), the observed differences in average family size ($Y_B - Y_O$) between British and others can be decomposed into the following four components:

$$(Y_B - Y_O) = 1/2 \sum (b_{iB} + b_{iO})(\bar{X}_{iB} - \bar{X}_{iO}) + \ldots\ldots\ldots\ldots\ldots\ldots (A)$$

$$1/2 \sum (b_{iB} - b_{iO})(S_{iB} + S_{iO}) + \ldots\ldots\ldots\ldots\ldots\ldots (B)$$

$$\sum (a_B - a_O) + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (C)$$

$$1/2 \sum (b_{iB} - b_{iO})(\bar{X}_{iB} - S_{iB} + \bar{X}_{iO} - S_{iO}) \ldots\ldots (D)$$

The b_i are multiple regression coefficients obtained by regressing the dependent variable on all independent variables for each ethno-religious group; and the X_i and S_i refer to the means and standard deviations; a's refer to the intercepts in the equations. The subscripts B and O refer to British and Other ethnic groups respectively. For simplicity, subscripts for religion are not included.

Component A presents the effect due to mean differences in structural variables. This component shows whether the equalization of the variable means ($\bar{X}_i$), weighted by the corresponding average regression coefficients (b_i), will

lead to equalization of fertility. If the overall value derived from this component is positive or negative, the interpretation is that compositional differences do account for a portion of observed fertility differences. A negative value implies a lowering of fertility differences. A zero value means that the observed fertility differences are not due to compositional differences (Trovato and Burch, 1980).

Component B represents the difference in regression slopes or the interaction effect of ethno-religious groups with the independent variables in the analysis. A value other than zero (negative or positive) means that ethno-religious groups interact with the compositional variables. A positive value indicates that the net effect of differences in the b_i is to raise fertility of a given ethno-religious group in comparison to the reference group (British), independent of the other types of effects. A negative value has similar but opposite interpretation.

Component C is the difference between intercepts, providing the main effect of ethno-religion on fertility. A positive value means that the net effect of the ethno-religious group is to lower fertility below the reference group independent of interaction (B) and compositional differences (A). A negative value will have similar but opposite interpretation. Thus, a non-zero difference means that even if the two groups had identical means on the various independent variables, and even if the effects of these variables (as represented by b_i) were

identical, the family size of the two groups would differ by that amount (Jiobu and Marshall, 1977). The last term (D) represents that part of the fertility differentials due to unmeasured variables. It is analogus to error term in regression analysis. A negative value indicates that the impact of unmeasured variables would be to decrease ethno-religious groups' fertility relative to the reference group.

Table 4.3 shows the means and standard deviations of all the variables in the analysis by ethnicity and religion. Some of the categories in ethnicity and religion are collapsed because of smaller sample size. With regard to average family size, Catholic women belonging to British, German and other ethnic groups are likely to have more children than their non-Catholic counterparts. The non-Catholics category in the study sample is composed mainly of Protestants. When all the ethnic groups are considered, the other Western Europeans have more children irrespective of their religious background, and the opposite holds true for Eastern Europeans.

The general pattern that emerges from the remaining variables in table 4.3 can be summarized as follows: 1) Catholic women of British, French, Irish and German ethnic origins have a slight edge over their counterparts (non-Catholics) on nativity scores; for the remaining three ethnic categories (other W.E, E.European and others) the non-Catholics have that edge. Members of the 'other' ethnic

Table 4.3 Means and standard deviations for study variables by religion and ethnicity

	CATHOLICS						
	British	French	Irish	German	Other W.E	E.European	Others
FERTILITY	.114	-.014	.028	.149	.166	-.471	.098
	(1.156)	(1.156)	(1.091)	(1.412)	(1.500)	(.925)	(1.207)
NATIVITY	.857	.986	.955	.831	.648	.714	.293
	(.352)	(.117)	(.208)	(.378)	(.479)	(.455)	(.462)
RESIDENC	2.152	1.788	1.985	1.942	2.247	2.143	2.582
	(.776)	(.781)	(.807)	(.841)	(.752)	(.795)	(.642)
WEDUC	12.546	11.914	12.542	12.058	11.774	13.145	12.595
	(2.200)	(3.025)	(2.306)	(2.111)	(3.427)	(2.874)	(2.855)
FINCOME	415.423	372.238	406.769	381.232	381.456	431.960	375.384
	(184.304)	(184.741)	(199.177)	(152.023)	(174.361)	(184.328)	(191.669)
DURMAR	13.084	12.868	12.735	14.989	12.860	10.744	12.582
	(7.687)	(7.605)	(6.949)	(7.909)	(8.003)	(7.570)	(7.922)

	NON-CATHOLICS						
	British	French	Irish	German	Other W.E	E.European	Others
FERTILITY	-.024	.001	.039	-.123	.269	-.243	-.047
	(1.155)	(.889)	(1.143)	(1.074)	(1.307)	(1.099)	(1.055)
NATIVITY	.809	.912	.914	.814	.825	.898	.398
	(.394)	(.285)	(.282)	(.391)	(.381)	(.305)	(.492)
RESIDENC	2.118	2.204	2.049	1.971	2.033	2.228	2.459
	(.793)	(.682)	(.859)	(.864)	(.812)	(.819)	(.707)
WEDUC	13.096	12.823	12.713	12.923	13.020	13.336	13.246
	(2.794)	(2.088)	(2.434)	(2.612)	(2.993)	(2.802)	(3.821)
FINCOME	415.875	371.248	358.741	421.447	420.857	397.660	418.356
	(203.847)	(165.103)	(172.087)	(216.993)	(195.243)	(162.459)	(224.765)
DURMAR	13.685	11.630	13.789	11.950	13.597	11.450	11.455
	(7.911)	(8.405)	(8.492)	(8.169)	(8.527)	(8.309)	(7.900)

* Standard deviations are shown in parenthesis

category are, in general, likely to be foreign-born. 2) No consistent pattern emerges in terms of residential preferences, except for the 'others' category. Irrespective of their religious background, members of the 'others' category prefer to live in big cities. This attraction to big cities may be due to their higher levels of education (rank second to E. Europeans), which enable them to find suitable jobs. 3) In terms of educational status, non-Catholic women are better educated than Catholics. 4) British family income is higher than French; this difference remains when religion is taken into account. The French have the lcwest income among Catholics and the second lowest among the non-Catholics. 5) Duration of marriage does not show any consistent pattern across the groups; however, four of the non-Catholic groups have longer marriage duration than their counterparts. In sum, there are considerable variations among the sub-groups on various structural or compositional variables, all of which would enable us to explain subgroup fertility differentials.

Results from the multiple regression analysis given in table 4.4 indicate that the significant coefficients have an expected influence on fertility, except for the Irish ethnic group; for this group, fertility increases with education and decreases with marriage duration. In general, nativity, residence and marriage duration are less important determinants of fertility for the majority of the groups under study than education and income. For example, nativity

Table 4.4 Multiple regression analysis of current family size by ethnicity and religion.

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
BRITISH									
Cath	127	1.5254	b.	.0318	.0479	-.1049 (**)	-.00085	.0098	.0826
			B.	.0097	.0321	-.1997	-.1358	.0650	
			r.	-.015	.027	-.257	-.175	.104	
Non-Cath	604	1.2947	b.	.1662	.0178	-.0967 (****)	-.00082 (****)	.0084	.1106
			B.	.0567	.0122	-.2340	-.1444	.0579	
			r.	.115	-.042	-.299	-.216	.059	
FRENCH									
Cath	568	.7534	b.	.1285	-.1087 (*)	-.0462 (***)	-.00061 (**)	.0060	.0499
			B.	.0130	-.0734	-.1207	-.0972	.0393	
			r.	.025	-.109	-.189	-.156	.089	
Non-Cath	60	.6857	b.	.0900	-.0403	-.0512	-.00050	.0140	.0452
			B.	.0288	-.0310	-.1202	-.0920	.1322	
			r.	.010	-.044	-.175	-.096	.104	
IRISH									
Cath	100	-.6475	b.	.3996	-.2197	.0963 (*)	-.0014 (***)	.0086	.0954
			B.	.0761	-.1626	.2035	-.2636	.0550	
			r.	.065	-.183	.045	-.207	-.059	
Non-Cath	134	1.048	b.	.3699	-.0053	-.0436 (***)	-.0014 (*)	-.0203	.0960
			B.	.0911	-.0040	-.0929	-.2105	-.1510	
			r.	.106	-.002	-.104	-.258	-.148	

cont...

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
GERMAN									
Cath	50	2.3596	b.	-.1683	-.4064	-.0433	-.0026 (*)	.0157	.1754
			B.	-.0451	-.2420	-.0648	-.2809	.0879	
			r.	-.078	-.241	-.283	-.280	.190	
Non-Cath	119	.4199	b.	.0189	-.0022	-.0472	-.00019	.0113	.0287
			B.	.0069	-.0018	-.1149	-.0379	.0862	
			r.	-.005	-.040	-.150	-.060	.106	
OTHER W.E									
Cath	174	1.4710	b.	.2881	-.3263 (**)	-.0283	-.0018 (***)	.0195	.1263
			B.	.0920	-.1635	-.0645	-.2063	.1042	
			r.	.065	-.225	-.218	-.255	.161	
Non-Cath	194	2.1917	b.	.2556	-.2027 (**)	-.1571 (****)	-.00013	.0278 (****)	.2366
			B.	.0744	-.1259	-.3597	-.0188	.1810	
			r.	.131	-.185	-.431	-.068	.261	
E.EUROPEAN									
Cath	76	.5791	b.	.4021 (*)	-.0132	-.0692	-.00090	-.0011	.1220
			B.	.1976	-.0113	-.2150	-.1786	-.0092	
			r.	.129	-.113	-.259	-.224	.052	
Non-Cath	69	.7713	b.	.0125	-.2996 (*)	.0116	-.0016	.0113	.1286
			B.	.0035	-.2232	.0295	-.2388	.0855	
			r.	-.035	-.278	-.150	-.266	.089	

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
OTHERS									
Cath	33	-.2034	b.	.8752 (*)	-.0618	-.0302	-.00071	.0522 (*)	.2343
			B.	.3352	-.0329	-.0714	-.1135	.3424	
			r.	.296	.041	-.191	-.110	.322	
Non-Cath	82	.7866	b.	-.3343	.1392 (****)	-.1164	.00028	.0333 (***)	.331
			B.	-.1560	.0933	-.4216	.05984	.2492	
			r.	-.227	.075	-.486	.056	.323	

Note: The level of statistical significance of each estimate under the one tailed t-test is indicated by ****, ****, *** and * for one, two, five and ten percent levels respectively.

exerts significant (barely) influence only for Catholics of Eastern European and 'other' ethnic groups. Residence is a strong predictor for other Western Europeans, but it is not so for the French Catholics and Eastern European non-Catholics. Duration of marriage, surprisingly, seems to exhibit significant influence only on four subgroups. This could be due largely to the fact that the effect of marriage duration is already taken over by age. With few exceptions, status variables such as education and income continue to play important roles in explaining fertility differentials among the Western Europeans. However, in the 'other-non-Catholics' category only education has a significant influence on fertility.

4.3 Regression Decomposition Analysis

The decomposition analysis tries to separate out the proportion of the difference in dependent variable (fertility) between groups due to different values of the independent variables (variable effect), the proportion due to the different effects of the independent variables (interaction effect), and due to unmeasured variables (error term).

Table 4.5 presents the results of decomposition analysis based on information from tables 4.3 and 4.4. The actual fertility differentials observed between the British and other ethno-religious groups appear to be small in most cases, but this fact may be of substantive interest in the

Table 4.5 Regression decomposition of current family size (net age) by ethnicity and religion.

	FRENCH		IRISH		GERMAN		OTHER W.E		E. EUROPEAN		OTHERS	
	Cath	N-cat	Cath	N-cat	Cath	N-cat	Cat	N-cat	Cath	N-cat	Cath	N-cat
Actual difference: (British-Others)	.128	-.025	.086	-.063	-.035	.099	-.052	[illegible]	.585	.219	.212	.023
Variable levels (A) (compositional differences)												
NATIVITY	-.0103	-.0132	-.0211	-.0281	-.0018	-.0005	.0334	-.0034	.0310	-.0080	.2558	-.0345
RESIDENCE	-.0111	.0010	-.0143	.0004	-.0376	.0011	.0132	-.0079	.0002	.0155	.0030	-.0268
WEDUC	-.0477	-.0202	.0000	-.0269	-.0362	-.0124	-.0514	-.0096	.0521	.0102	.0033	.0160
FAMINC	-.0315	-.0295	-.0097	-.0634	-.0590	.0028	-.0450	.0024	.0145	-.0220	-.0312	.0007
DURMAR	.0017	.0230	.0032	.0006	-.0243	.0171	.0033	.0016	.0102	.0220	.0156	.0465
Subtotal	-.0989	-.0389	-.0419	-.1174	-.1589	.0081	-.0465	-.0169	.1080	.0177	.2465	.0018
Differences between intercepts(C)	.7720	.6090	2.1729	.2467	-.8342	.8748	.0544	-.8970	.9463	.5233	1.7288	.5081
Variable effects (B) (Interaction: ethno-religion with variables)												
NATIVITY	-.0227	.0259	-.1030	-.0689	.0730	.0578	-.1065	-.0346	-.1494	.0537	-.3433	.2217
RESIDENCE	.1219	.0428	.2118	.0191	.3673	.0166	.2859	.1770	.0480	.2558	.0778	-.0910
WEDUC	-.1534	-.1111	-.4533	-.1388	-.1328	-.1338	-.2155	.1748	-.0906	-.3030	-.1888	.0652
FAMINC	-.0443	-.0590	.1055	.1090	.2943	-.1326	.1704	-.1377	.0092	.1429	-.0263	-.2357
DURMAR	.0291	-.0457	.0088	.2354	-.0460	-.0233	-.0761	-.1594	.0832	-.0235	-.3309	-.1968
Subtotal	-.0694	-.1471	-.2302	.1558	.5558	-.2153	.0582	.0201	-.0996	.1259	-.8115	-.2366

Unmeasured (D)

NATIVITY	-.0664	.0397	-.2302	-.1066	.0958	.0617	-.0864	-.0384	-.1415	.0775	-.1417	.0803
RESIDENCE	.1866	.0827	.3417	.0290	.5627	.0243	.5372	.2807	.0832	.4339	.1819	-.1868
WEDUC	-.5645	-.4786	-2.071	-.5464	-.6250	-.5102	-.7159	.6139	-.3680	-1.128	-.7502	.1943
FAMINC	-.0502	-.0669	.1206	.1156	.4028	-.1312	.2082	-.1510	.0120	.1744	-.0290	-.2231
DURMAR	.0203	-.0252	.0067	.1589	-.0368	-.0139	-.0497	-.1052	.0467	-.0129	-.2132	-.1161
Subtotal	-.4742	-.4483	-1.8322	-.3495	.3995	-.5693	-.1066	.6000	-.3676	-.4551	-.9522	-.2514
Total*	.1295	-.0253	.0686	-.0644	-.0378	.0983	-.0405	-.2938	.5871	.2118	.2116	.0219

* Totals do not add up exactly to the actual differential due to rounding.

present context. French Catholics have .128 fewer children than British Catholics and French non-Catholics. The finding of lower fertility for French Catholics contradicts Beaujot's (1975) findings but supports those of Balakrishnan et al. (1979). However, the former study is based on the Edmonton sample. The present analysis shows further that British religious groups have fewer children than Irish non-Catholics, German Catholics and other Western Europeans, but have more than Catholics of Eastern European and 'other' ethnic origin.

The remainder of this section examines how much of these differences in family size between the British and others can be accounted for by the differences in socioeconomic and demographic variables.

The subtotal for component A suggests that for the Western Europeans (except German non-Catholics), equalization of variable levels to those of the British group results in the lowering of fertility. Such equalization, on the other hand, results in increasing fertility for Eastern Europeans and others, provided the relationship between the variables for these two groups remain as it now is. Note also, Catholics of different ethnic origins are affected more so by equalization than are non-Catholics (except the Irish). It is also clear that education and income are important among Western Europeans (with few exceptions) in reducing fertility. These two factors tend to increase fertility among Eastern European

Catholics. Education, however, serves to lower fertility among non-Catholics of 'other' ethnic origin. Nativity appears to be an important factor for Eastern European and other Catholics. It raises fertility above that of the British, thus suggesting that foreign-born members of these groups may be responsible for current lower average family size. The equalization of duration of marriage for subgroups to that of the British raises fertility, particularly for other non-Catholics (except German Catholics). In sum, the groups that are likely to benefit from such adjustments are Western Europeans. For German Catholics, for example, all factors (except nativity) serve to lower their fertility but serve to raise fertility for Eastern Europeans. In essence, the hypothetical experiment we have conducted suggests that structural factors do account for a small portion of observed fertility differences between the British and other groups.

The main effect or normative aspect (Lopaz and Sabah, 1978) of ethno-religious groups on fertility is shown by the difference between intercepts (component C). These effects are much stronger than the effects due to differences in structural variables (component A). This suggests that members of different groups have different norms and values with regard to appropriate family size. The results, in general, indicate that the independent effect of ethno-religion for various subgroups is to lower fertility below the level of the British. However, among German

Catholics and other Wetern European non-Catholics the effect is to raise fertility by .834 and .897 respectively. It is also important to note that equalization of variable means for Catholics of Irish and other ethnic origin to those of the British would have resulted in raising their fertility by 2.17 and 1.73 respectively. But the current situation is that former group's fertility is lower than that of the British.

The interaction effect (component B), as mentioned earlier, represents the difference in slopes. In substantive terms, it is that amount by which the difference in average fertility would be lessened (or increased) if the slope of the subgroup regression line became equal to that of the British line, provided the relationship between variables remains as it is now for the subgroup. The results show that the interaction effects (as revealed by the subtotals) are much smaller than the main effects, but larger than the effects of variable levels. This fact in turn suggests that, apart from the direct effects of ideas held by members of different groups (cultural context) on fertility, they also modify the way in which the independent variables interact. The interaction component is of greater value in explaining fertility differences among French non-Catholics, Irish, Germans, Eastern European non-Catholics and others. The sum of effects suggests that the interaction effect is to lower fertility among non-Catholics of French, German and other ethnic groups and Catholics of Irish and other ethnic

groups. These reductions are mainly due to education(-.4533) for Irish Catholics; education (-.1338) and income (-.1326) for German non-catholics; nativity (-.3433), education (-.1888) and duration of marriage (-.3309) for 'other' Catholics; and income (-.2357) and duration of marriage (-.1968) for 'other' non-Catholics. Education, in general, interacts with ethno-religious groups to lower fertility below the level of British religious groups.

On the other hand, interaction effects serve to raise fertility among non-Catholics of Irish (.1558) and Eastern European (.1259) origin, and Catholics of German (.5558) origin. These increments are largely due to income (.1090) and duration of marriage (.2354) for Irish non-Catholics, and residence and income for Eastern European non-Catholics (.2558,.1429) and German Catholics (.3673,.2943). Residence, in general, interacts with ethno-religious groups to raise fertility.

The error term (component D) represents that part of the fertility differential due to unmeasured variables. Although it does not have any substantive interpretation, it does indicate that in most ethno-religious groups its impact would be to decrease family size relative to the British. It is interesting to note, particularly among Irish and 'other' Catholics, that the factors likely to keep their family size below the level of British are not captured by the present model. In fact, a great portion of variation, particularly with regard to the way in which education acts to raise or

lower fertility in relation to any other variables in the model, remains unexplained.

The following generalizations, then, can be drawn from the decomposition analysis: 1) the equalization of mean differences in variable levels explains, to a certain extent, the variations in fertility; in general, the equalization serves to lower fertility among the Western Europeans. 2) The main effect or normative aspect of different ethno-religious groups continue to exert strong influence on fertility. In most cases, the various norms and values associated with a given group favours smaller family size in relation to the British. 3) The interaction effect seems to be more important than variable level effect in explaining fertility differences. Although the results are mixed, the ethno-religious groups interact systematically with education and duration of marriage to reduce fertility. 4) A substantial portion of variance in fertility remains unexplained in the analysis.

In conclusion, we can say that the structural factors account for only a small portion of variance in fertility. Religion does not have significant influence on fertility when other factors are held constant. However, when religion is combined with ethnicity, the results show that the average number of children are higher for Catholics on three groups (British, German, and Others) in comparison to non-Catholics (composed primarily of Protestants). Women's education and her family income appear to be the stronger

predictors of fertility.

Because of the presence of significant interactions of ethnicity and religion with other variables, the regression analysis has been done separately for each ethno-religious group. Once again, education and income exert a strong influence on fertility but vary in their magnitude of effect across groups. Nativity appears to be a significant factor for Eastern Europeans and 'others'. The regression decomposition analysis indicates that the characteristics or differential levels hypothesis provides very little support for the ethno-religious fertility differentials. Equalization of differences in variable means to those of the British generally results in the lowering of fertility among the Western Europeans. Eastern Europeans and 'others' are not benefited by such adjustments, however. This may be due to the fact that the majority of them are foreign-born (particularly the Catholics), score higher on status variables, and already have a smaller family size. It is also important to note that ethno-religious group by itself exerts significant influence on fertility. This indicates that group norms and values continue to play an important role in explaining fertility. However, the present model, even in a heuristic manner, does not capture the realm of how these factors are translated into reducing or increasing fertility. For example, the analysis demonstrates that while education acts to lower fertility, place of residence acts to increase the same, for various ethno-religious groups.

Evidently, a significant portion of variance in ethno-religious fertility differentials remains unexplained by these two variables. Therefore, we need to look elsewhere for explanations.

Chapter 5

ECONOMIC DETERMINANTS OF FERTILITY

A number of researchers have indicated the importance of the role of economic variables in fertility analysis. The approaches available to understanding the role of such factors are discussed in chapter 1. The economic approach, in general, claims that fertility decisions are arrived at through a consideration of relative preferences for children (as compared to other consumer goods), direct and indirect (opportunity) costs of children, and the couples' standard of living. The purpose of this chapter is to identify the crucial economic determinants and their relevance to fertility analysis.

The economic approach to fertility was developed by Leibenstein (1957), Becker (1960), Freedman (1963), and Easterlin (1966, 1969, 1973, 1975). Although Leibenstein (1957) laid the ground work for incorporating essential elements into an economic model, demographers generally take their point of reference from Becker's (1960) work. Becker applied the theory of demand for consumer durables to the demand for children. According to him an increase in income will enable couples to have more children and to spend more money on each child. However, he suggests that the quantity elasticity of children will be small in comparison to the quality elasticity. In other words, couples with higher income tend to increase the quality of their children instead of merely increasing the number of children to their

satisfaction. He tested his model using the data from the Indianapolis survey and found that the husband's current income and fertility are negatively related. Although such a relationship is not strong enough to refute the positive income-fertility relationship, this finding may be due to unevenly distributed knowledge of contraceptives. For example, couples may have more children than they desire because of inadequate knowledge of contraception at lower income level. Thus, Becker suggests the use of desired rather than actual fertility in testing economic models.

Several aspects of Becker's model have undergone close scrutiny by researchers. Willis (1973), for example, argues that the insignificant relationship between income and fertility may be due to a tradeoff between the quality and quantity of children. Couples with higher income may prefer higher quantity and quality of children. But the cost of children may reduce the resources for additional children. Therefore, the quantity-quality tradeoff of children discourages a higher number of children (Freedman and Coombs, 1966; Thornton, 1979). Blake (1968) and Namboodiri (1970), on the other hand, criticize Becker's model for ignoring the indirect or 'opportunity costs' of childbearing. Blake (1960) suggests that "upper income persons have more attractive and diversified cousumption opportunities than those of lesser income" and that an "upper income person is normally under some social pressure to take advantage of these opportunities" (p.20). Thus the

marginal costs of an additional child, in terms of alternatives foregone, would be greater for an upper than for a lower income family. Therefore, economists have felt the need to incorporate parents' opportunity costs--in particular the wife's foregone labour market earnings--into child costs in the study of fertility differentials (Becker, 1965; Easterlin, 1969; Mincer, 1963). Mincer (1963) in estimating the relative strength of income and opportunity cost effects, concludes that the latter effect outweighs the former. Therefore, the higher the wife's earnings, the higher the price of childbearing, and consequently, the smaller family size.

The concept of income appropriate in fertility analysis is a much discussed topic. Although Becker does not clarify this, in his later work (1965) he suggests the use of 'full' or potential income as an appropriate concept for household decision making. A family's potential income is simply the income it would earn by devoting all its time and other resources to this end (Becker, 1965). Since households exchange money income for time spent in other activities, potential income does not equal actual income. Easterlin (1969) notes that potential income includes income foregone in order to engage in other activities. For example, wages foregone by a non-working mother to care for children would be included in potential income; therefore, actual income may be a poor proxy for potential income. Potential income also incorporates the idea of permanent income developed by

Friedman(1957) with reference to consumer behaviour. Some economists argue that it is not current income that is important in such long-range decisions as childbearing, but rather, anticipated income over the whole childbearing period (Easterlin, 1969; Turchi, 1975; Willis, 1973). Becker(1960), in fact, suggests that "a more complete account analysis would have to take into account the permanent income concept" (p. 227). In fertility analysis, permanent income is measured by taking actual current income at an age where income should reflect difference in lifetime earnings. Easterlin (1969) argues that the best income proxy for a man's 'lifetime' or permanent income is his income at age 35-44.

Empirical studies show some support for the potential income hypothesis. Mincer (1963) finds a positive relationship between potential family income and fertility. Potential income is simply the sum of the husband's actual full-time earnings plus the wife's estimated full-time income based on her reported earnings. Decomposing potential income, Mincer finds that the husband's income is positively related to fertility but that the wife's potential income is negatively related. Thus, inclusion of only the husband's income rather than potential family income would increase the positive income effect. Freedman and Coombs (1966) collected information from a sample of U.S. respondents on how much change they expected in their income over the next ten years and how much difference this change would make in

their present standard of living. They show that potential income is positively related to birth expectations. In an alternative approach to measuring permanent potential income, Willis (1973) estimates the husband's income at age 40, for men aged 35 to 64, on the basis of education, occupation, race, residence, labor market experience, and cohort, as reported in 1960 census. He finds a stronger negative relationship between children ever born and estimated income for age 40 than between children ever born and current income. Therefore, he concludes that his results "support the belief that a longer-run lifetime concept of income is relevant to fertility behaviour" (p.62).

Freedman (1963) introduced the concept of 'relative income' to fertility analysis. Relative income differs from other income concepts in that it combines elements of both income and tastes. Studies dealing with the relative income concept hypothesize that a relationship exists between the ratio of, or differences between, actual income and the income of the appropriate reference group and fertility. Tastes and desires for material goods and children are formed by association with this group. The hypothesis assumes that in situations where present income is high relative to maintenance of the desired standard of living of the couple's group, the expected number of children will be higher. Freedman (1963), based on 1955 GAFS data, classified the husband's actual income as high or low relative to the income expected in his age, educational and occupational

reference group. She finds the husband's relative income to be positively related to fertility.

Similar conclusions are drawn by other researchers (Bahr et al., 1975; Bean and Wood, 1974; Bernhardt, 1972; Chaudhury, 1977; Kuntz, 1965). Kuntz (1965) finds a positive relationship between relative income and fertility in most groups, except in those where husbands are in low status occupations with low education and wives who married young. Bean and Wood (1974) include both the concepts of relative and potential income in their analysis. They find that the husband's relative and potential incomes are highly correlated, making it difficult to separate their effects. When either one of the two income variables is included in regression analysis, Anglos show a significant positive effect and Blacks, a significant negative effect on fertility. Bahr et al. (1975) report that relative income has significant effect on fertility even when controlled for current income; they also note that the correlation coefficient between the two income measures is .79. Reed et al. (1975) find support for the hypothesis among both blacks and whites. Chaudhury (1977), on the other hand, shows that relative income is related more to spacing than to cumulative fertility among Canadian women.

Easterlin (1973) suggests the important role of relative economic status in determining fertility. He measures relative income based on a comparison of the current incomes of young couples and the incomes of the

parents when the couples were teenagers. In other words, he assumes that relative economic status is a function of the income and labor force experience of the sons relative to that of their fathers. He examines the fertility behaviour of couples since the 1930's in the United States. He suggests that a rise in the relative economic status of the sons, such as that which occured between 1930 and 1950, encourages earlier marriage and childbearing. Conversely, a decline in relative economic status between 1950 and 1960, discouraged marriage and childbearing. Hence, relative income is hypothesized to be positively related to fertility.

However, not all the empirical studies support the relationship between relative economic status and fertility. McDonald and Rindfuss (1978) in their examination of Easterlin's hypothesis find no significant influence of relative economic status on fertility. Thornton (1978) studied the relationship between childbearing and several different income concepts including husband's income, relative income, subjective well-being and optimism about future economic conditions, and observed no consistent evidence for the positive effect of income on fertility. Crimmins-Gardner and Ewer (1982) report that potential family and husband's relative income are not significantly related to either current or desired fertility or the timing of the first birth. However, their analysis indicates that the wife's potential and actual incomes show strong negative

relationship to fertility in comparison to the husband's income.

Despite the mixed results produced by the review of empirical findings, there is a general consensus that economic factors do account for a certain amount of variations in fertility. This is particularly true when the economic status is measured by potential or relative income rather than by current income. However, critics like Blake (1968) and Duesenberry (1960) question the direct effect of economic factors on fertility. In turn, they suggest that social institutional pressures mediate the effect of economic factors on fertility decisions. Therefore, normative constraints and social reference groups may be important in fertility decision-making. In this chapter, we will examine the contribution of economic factors to fertility decision-making.

5.1 Conceptualization of Economic Variables

As in many other studies, formulation of a given concept depends on the nature and availability of data. The Canadian Fertility Survey data provide valuable information for the creation of certain dimensions of economic status. But the information necessary to create dimensions such as 'direct costs' or potential or permanent income is not available. The measures adopted to formulate concepts for the present study are only approximate. Some may be a more valid indicator of a given concept than others. For example,

it is possible to assess the relative economic status of an individual through estimation of his income in direct relation to others in his group; but to assess the 'opportunity cost' one may require detailed information on wages foregone in order to engage in other activities such as child care. The variables considered for this study are assumed to serve not only as resources for families in the achievement of desired ends, but also as positional variables in the social structure (see pages 41-42).

It is quite evident from the review of empirical literature given in section 5.1 that relative economic status is a crucial factor in making fertility decisions. An individual's relative income is estimated as the ratio of, or difference between actual income and the income of the appropriate reference group. The latter approach is adopted here, whereby an individual's relative income is the difference between his actual income and his estimated income based on a regression of actual income on age, occupation and education. Relative income is categorized as a) high, b) medium, and c) low, using the following procedures. The estimated (predicted) income of the husband is coded into income groups similar to actual income. If the code number for the actual income is equal to the code number for estimated (predicted) income, the relative income position falls into the 'medium' category. If the code number for actual income is higher than the code number of predicted income, the relative income position falls into

the 'high' category, and, if it is lower, the related income position is considered 'low'.

Wife's income received less attention than husband's income in economic models because of mixed results produced by the former and the direct effect of the latter. On the one hand, the wife's income increases the total family resources and thus stimulates the taste for children, but on the other i[illegible]o increases the opportunity costs involved in rearing [illegible]d bearing children. However, modern women in comparison to traditional women tend to combine the roles of mother and worker because economic stress involved in families requires both partners to work. Contribution of wife's income to families, therefore, needs to be taken into consideration in economic analysis of fertility (McVey, in Veevers, 1983). Relative income for wives is not computed in the present study due to greater percentage of missing data in wife's income (40%). Wife's actual income is used as her potential income. Husband's actual income used as a proxy for potential family income by economists, is also considered for analysis in addition to family income.

Additional proxy measures are also used to assess the financial situation of couples in making fertility decisions. These measures include couples' subjective feelings about lifetime savings and financial success. Measures of this kind will have problems since lifetime savings and feelings of financial success may themselves be influenced by family size (Freedman and Mueller, 1974).

Other measures, such as couples' financial plans for the future, and their standard of living compared to others', are also included to assess the effect of economic rationality on fertility decision-- making. The subjective measures proposed here appear to be valid indicators of the determinants of expected family size (Suter et al., 1976).

Education has different consequences for men and women with respect to the fertility process and the roles they play in relation to that process (Cain and Weininger, 1973; Cochrane, 1979; Janowitz, 1976; United Nations, 1983). Economists treat the husband's education as 'permanent income' and the wife's education as a proxy for 'opportunity cost' in studying the role of these factors in fertility analysis. These two measures are incorporated in the present model in that context, but are also used to look for the presence of any interactions.

The notion of work commitment used by researchers (Kupinsky, 1977; Pinelli, 1971; Sabol, 1974; Safilios-Rothschild, 1971, 1972) received little attention in demographic research. The rationale for using this concept is that women who work regularly are liable to develop greater commitment, and jobs they take outside the home offer alternative interests and achievments, and constrain domesticity and motherhood. The notion of commitment is measured by the number of interruptions of women in the labor force. A woman who plans to be employed after childbearing might rationally plan to limit her

childbearing-related interruptions in labor force participation by limiting the number of children she bears. She is also aware of the fact that employment interruptions will reduce her employability and wage potential. Thus, interruption cost would encourage women to have both fewer children and a closer spacing of children in order to concentrate the period of labor-force withdrawl. This is particularly true for women with higher education (Robinson, 1987). Accordingly, one can assume that women with a lower number of work interruptions are likely to have a greater commitment to work, thereby prefering to have smaller family size. There is an inherent problem in using this measure, however. Since the number of interruptions will also be affected by the number of children born, use of a single equation model for estimation would produce biased results.

Husband's occupational status is also included in the analysis as a control and as an interacting variable with other economic variables, as reported in earlier studies (e.g. Chaudhury, 1977).

The dependent variables for the analysis are current and expected family size, adjusted for age. Expected family size may be a more appropriate measure of fertility, particularly when the independent variables reflect the current economic conditions of the family. The assumption here is that individuals base decisions about future family size on existing economic constraints. Current family size, on the other hand, is an outcome of long term consequences;

therefore, subjective economic measures are also included to place the dependent and independent variables within an appropriate time frame. The effects of independent variables are adjusted for duration of marriage.

5.2 Bivariate Analysis of Economic Variables

The Pearson correlation coefficients given in table 5.1 show that some of the correlations are high enough to lead to problems of multicollinearity. The following correlations are comparatively higher than others: husband's education with wife's education (.58) and husband's occupation(.58); family income with wife's income (.57), husband's income (.77) and husband's relative income (.51); and husband's income with husband's relative income(.71). These correlations might cause problems in multivariate analysis when other variables are held constant to asses the effect of individual variables.

All the independent variables show highly significant association with current family size in the expected direction, except husband's relative income. Note also, wives' characteristics, such as income (-.23), education(-.25) and interruptions (.22) are highly associated with current family size in relation to husband or family characteristics. A similar conclusion can be reached by looking at the association between independent variables and expected family size. The magnitude of the associations, however, is smaller and the correlations of

Table 5.1 Pearson correlation coefficients for economic variables.

	AFERT	EXFERT	WEDUC	HEDUC	WINCOME	HINCOME	FINCOME	HR	HOCCU	STDLIVNG	SAVING
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.2532 (3674) P= .000	-.1739 (3607) P= .000	-.2304 (2236) P= .000	-.0323 (2891) P= .041	-.1615 (2878) P= .000	.0211 (2802) P= .132	-.1193 (3577) P= .000	.0430 (3646) P= .005	-.1374 (3546) P= .000
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.1617 (3658) P= .000	-.1144 (3591) P= .000	-.1587 (2230) P= .000	-.0559 (2882) P= .001	-.1280 (2869) P= .000	-.0004 (2794) P= .492	-.0903 (3562) P= .000	.0182 (3632) P= .136	-.1095 (3532) P= .000
WEDUC	-.2532 (3674) P= .000	-.1617 (3658) P= .000	1.0000 (3680) P= .	.5796 (3614) P= .000	.4172 (2241) P= .000	.2232 (2894) P= .000	.3441 (2880) P= .000	.0616 (2807) P= .001	.3772 (3583) P= .000	.0129 (3652) P= .217	.1276 (3553) P= .000
HEDUC	-.1739 (3607) P= .000	-.1144 (3591) P= .000	.5796 (3614) P= .000	1.0000 (3614) P= .	.2544 (2208) P= .000	.3412 (2869) P= .000	.3467 (2851) P= .000	.0115 (2807) P= .272	.5752 (3529) P= .000	-.0323 (3592) P= .026	.1620 (3495) P= .000
WINCOME	-.2304 (2236) P= .000	-.1587 (2230) P= .000	.4172 (2241) P= .000	.2544 (2208) P= .000	1.0000 (2241) P= .	.2008 (1880) P= .000	.5671 (1894) P= .000	.0770 (1825) P= .000	.1933 (2195) P= .000	-.0748 (2230) P= .000	.0802 (2193) P= .000
HINCOME	-.0323 (2891) P= .041	-.0559 (2882) P= .001	.2232 (2894) P= .000	.3412 (2869) P= .000	.2008 (1880) P= .000	1.0000 (2895) P= .	.7682 (2807) P= .000	.7109 (2807) P= .000	.3981 (2834) P= .000	-.1351 (2884) P= .000	.2134 (2825) P= .000
FINCOME	-.1615 (2878) P= .000	-.1280 (2869) P= .000	.3441 (2880) P= .000	.3467 (2851) P= .000	.5671 (1894) P= .000	.7682 (2807) P= .000	1.0000 (2881) P= .	.5114 (2725) P= .000	.3591 (2819) P= .000	-.1478 (2867) P= .000	.2055 (2813) P= .000
HR	.0211 (2802) P= .132	-.0004 (2794) P= .492	.0616 (2807) P= .001	.0115 (2807) P= .272	.0770 (1825) P= .000	.7109 (2807) P= .000	.5114 (2725) P= .000	1.0000 (2807) P= .	-.0060 (2807) P= .376	-.1334 (2797) P= .000	.1127 (2741) P= .000
HOCCU	-.1193 (3577) P= .000	-.0903 (3562) P= .000	.3772 (3583) P= .000	.5752 (3529) P= .000	.1933 (2195) P= .000	.3981 (2834) P= .000	.3591 (2819) P= .000	-.0060 (2807) P= .376	1.0000 (3584) P= .	-.0434 (3567) P= .005	.1579 (3461) P= .000
STDLIVNG	.0430 (3646) P= .005	.0182 (3632) P= .136	.0129 (3652) P= .217	-.0323 (3592) P= .026	-.0748 (2230) P= .000	-.1351 (2884) P= .000	-.1478 (2867) P= .000	-.1334 (2797) P= .000	-.0434 (3567) P= .005	1.0000 (3652) P= .	-.1444 (3527) P= .000
SAVING	-.1374 (3546) P= .000	-.1095 (3532) P= .000	.1276 (3553) P= .000	.1620 (3495) P= .000	.0802 (2193) P= .000	.2134 (2825) P= .000	.2055 (2813) P= .000	.1127 (2741) P= .000	.1579 (3461) P= .000	-.1444 (3527) P= .000	1.0000 (3553) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	WEDUC	HEDUC	WINCOME	HINCOME	FINCOME	HR	HOCCU	STDLIVNG	SAVING
FSUCCESS	-.0452	-.0110	.0444	.0871	.0728	.2232	.2156	.1575	.1246	-.2875	.2404
	(3668)	(3652)	(3673)	(3607)	(2238)	(2890)	(2876)	(2802)	(3578)	(3647)	(3547)
	P= .003	P= .253	P= .004	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000
FNCLPLAN	-.0837	-.0566	.1045	.1126	.0676	.0849	.0864	.0611	.0779	-.1259	.2046
	(3671)	(3656)	(3676)	(3610)	(2239)	(2893)	(2880)	(2805)	(3580)	(3650)	(3549)
	P= .000	P= .000	P= .000	P= .000	P= .001	P= .000	P= .000	P= .001	P= .000	P= .000	P= .000
INTERUPT	.2177	.1524	-.1675	-.0764	-.2370	.0353	-.2300	.0429	.0008	.0308	-.0475
	(3674)	(3659)	(3680)	(3614)	(2241)	(2895)	(2881)	(2807)	(3584)	(3652)	(3553)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .029	P= .000	P= .012	P= .480	P= .031	P= .002

	FSUCCESS	FNCLPLAN	INTERUPT
FSUCCESS	1.0000	.1605	.0011
	(3674)	(3672)	(3674)
	P= .	P= .000	P= .474
FNCLPLAN	.1605	1.0000	-.0256
	(3672)	(3677)	(3677)
	P= .000	P= .	P= .061
INTERUPT	.0011	-.0256	1.0000
	(3674)	(3677)	(3681)
	P= .474	P= .061	P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

standard of living and financial success are not significant. It is interesting to note that husband's relative income (although not significant) shows a positive association with current and negative association with expected family size.

Table 5.2 presents the unadjusted and adjusted deviations for current family size. Eta values indicate that husband's income, husband's relative income, financial success, financial planning and standard of living are least important in explaining variation in current family size.

Educational attainment of husband and wife shows a linear inverse relationship with fertility. The range of .69 and .98 for husband and wife respectively, reveals the stronger effect of the latter than of the former. Adjustment for duration of marriage results in the greatest reduction in mean number children for 0-8 years of education. This means, then, that even when the fertility measure is adjusted for age, a substantial portion of variation remains among individuals belonging to this educational group (0-8 yrs) in terms of duration of marriage. In other words, the age at marriage is quite different among couples in this educational category.

It is also evident from table 5.2 that wife's income and family income exert stronger influence on fertility than husband's current and relative incomes. The first three measures show fairly clear inverse relationship with fertility while the relationship of husband's relative

Table 5.2 Unadjusted and adjusted deviations for current family size(net age) by economic variables.

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
WEDUC	(Grand mean=.05)				
1. 0-8 years	308	.56	.48	.21	.000
2. 9-12 years	1672	.12	.11		
3. 13-15 years	925	-.18	-.16		
4. 16+ years	477	-.42	-.40		
WINCOME	(Grand mean=.05)				
1. LE 7000	538	.18	.16	.26	.000
2. 7100-12000	469	-.07	-.07		
3. 12100-19000	500	-.28	-.26		
4. 19100+	524	-.60	-.58		
5. Missing	1352	.29	.28		
HINCOME	(Grand mean=.05)				
1. LE 19000	611	.07	.11	.05	.072
2. 19100-26000	683	.01	.04		
3. 26100-35000	709	-.04	-.04		
4. 35100+	675	-.10	-.14		
5. Missing	705	.07	.03		
FINCOME	(Grand mean=.05)				
1. LE 25000	636	.26	.30	.17	.000
2. 25100-35000	685	.06	.08		
3. 35100-49000	660	-.11	-.10		
4. 49300 +	678	-.34	-.36		
5. Missing	726	.13	.09		
HRELINCOME	(Grand mean=.05)				
1. Low	1378	-.03	-.01	.03	.470
2. Medium	232	-.07	-.08		
3. High	999	.01	.02		
4. Missing	775	.05	.02		
STDLIVING	(Grand mean=.05)				
1. Better	1131	-.03	-.02	.05	.019
2. Same	2074	.00	-.01		
3. Worse	153	.26	.26		

.....cont

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
HOCCUP	(Grand mean=.05)				
1. Farmer	157	.71	.68	.19	.000
2. Blue collar	1611	.15	.15		
3. White collar	1539	-.23	-.23		
HEDUC	(Grand mean=.05)				
1. 0-8 years	385	.41	.32	.17	.000
2. 9-12 years	1520	.08	.08		
3. 13-15 years	694	-.11	-.08		
4. 16+ years	728	-.28	-.27		
SAVING	(Grand mean=.05)				
1. Never	788	.29	.29	.15	.000
2. Time to time	1174	.00	.00		
3. Regular basis	1300	-.17	-.17		
FINSUCESS	(Grand mean=.05)				
1. Not been successful	131	.27	.28	.06	.004
2. Reasonably successful	2333	.02	.02		
3. Very succes-sful	914	-.09	-.08		
FNCLPLAN	(Grand mean=.05)				
1. Never	96	.44	.38	.09	.000
2. Rarely	303	.12	.10		
3. Occasionally	1090	.08	.08		
4. Most of time	1892	-.09	-.08		
INTERUPT	(Grand mean=.05)				
1. Ever worked	478	-.37	-.35	.21	.000
2. 1-2 times	1224	-.18	-.16		
3. 3-9 times	1378	.16	.14		
4. Never worked	304	.57	.56		

income (although not significant) is unclear. There is an indication, however, that the mean number of children seems to be higher for husbands with higher relative income. When adjustment for age is not made, the current family size is 1.90, 1.96 and 1.97 for low, medium and high relative income groups respectively. Cross-tabular analysis (not shown) of husband's income by his relative income revealed that lower relative income generally corresponds to lower income of husband (79%), and higher relative income to higher income of husband (88%). The percentages within parentheses are calculated by dividing husbands' income less than and greater than 26,000 dollars. It translates, then, from our data that husbands in higher income group are likely to have more children if their income is higher than their reference group income. The missing values category also provides some interesting results, indicating that individuals in these categories are likely to have more children. A careful examination of these individuals reveals that they possess the characteristics of lower socioeconomic status.

The effects of standard of living do not support the point made earlier. That is, even if the couples' standard of living is comparatively better than others', they may not prefer to have more children, as revealed by relative income. On the contrary, couples who feel their standard of living is worse than others' have more children. It is quite possible, however, that individuals feeling bad about their standard of living might have reached that stage by having

more children. So, one might ask what the dependent variable should be in this regard.

The subjective assessment of financial situations (savings, financial success, financial planning) by couples shows the expected inverse relationship with fertility. Couples who save money on a regular basis, who feel financially successful, and who make financial plans for the future are likely to have smaller family size than their counterparts. Among these three measures, savings best explain variation in fertility. Commitment to work, measured by the number of interruptions, shows that women working continuously without any interruptions are likely to have a lower number of children than women who have never worked. The range for this variable is .94, which is the second strongest effect observed among the economic variables considered for this analysis. The influence of commitment to work on fertility remains stronger even after adjustment is made for duration of marriage.

The husband's occupational status, used here as a control, shows the expected inverse relationship with fertility. Farmers and blue collar workers have .71 and .15 more children respectively. White collar workers, on the other hand, have an average of .23 fewer children.

Similar analysis for expected family size given in table 5.3 does not diverge significantly from findings reported in table 5.2 for current family size. However, husband's relative income is negatively (although not

Table 5.3 Unadjusted and adjusted deviations for expected family size(net age) by economic variables.

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
WEDUC	(Grand mean=.03)				
1. 0-8 years	308	.48	.44	.14	.000
2. 9-12 years	1672	.02	.02		
3. 13-15 years	925	-.09	-.08		
4. 16+ years	477	-.22	-.20		
WINCOME	(Grand mean=.03)				
1. LE 7000	538	.09	.07	.19	.000
2. 7100-12000	469	-.07	-.07		
3. 12100-19000	500	-.18	-.17		
4. 19100+	524	-.43	-.42		
5. Missing	1352	.22	.22		
HINCOME	(Grand mean=.03)				
1. LE 19000	611	.10	.12	.06	.007
2. 19100-26000	683	.00	.02		
3. 26100-35000	709	-.05	-.05		
4. 35100+	675	-.12	-.14		
5. Missing	705	.08	.06		
FINCOME	(Grand mean=.03)				
1. LE 25000	636	.20	.22	.14	.000
2. 25100-35000	685	.01	.02		
3. 35100-49000	660	-.09	-.08		
4. 49300 +	678	-.27	-.28		
5. Missing	726	.15	.13		
HRELINCOME	(Grand mean=.03)				
1. Low	1378	.00	.00	.04	.193
2. Medium	232	-.05	-.06		
3. High	999	-.04	-.04		
4. Missing	775	.08	.06		
STDLIVING	(Grand mean=.05)				
1. Better	1131	-.01	.00	.04	.124
2. Same	2074	-.01	-.01		
3. Worse	153	.20	.20		

cont.....

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
HOCCUP	(Grand mean=.03)				
1. Farmer	157	.70	.69	.16	.000
2. Blue collar	1611	.09	.09		
3. White collar	1539	-.17	-.17		
HEDUC	(Grand mean=.03)				
1. 0-8 years	385	.34	.30	.11	.000
2. 9-12 years	1520	.02	.02		
3. 13-15 years	694	-.05	-.04		
4. 16+ years	728	-.16	-.16		
SAVING	(Grand mean=.03)				
1. Never	788	.24	.24	.12	.000
2. Time to time	1174	.00	.00		
3. Regular basis	1300	-.14	-.14		
FINSUCESS	(Grand mean=.03)				
1. Not been successful	131	.21	.22	.03	.148
2. Reasonably successful	2333	-.01	-.01		
3. Very succes-sful	914	-.02	-.02		
FNCLPLAN	(Grand mean=.03)				
1. Never	96	.33	.30	.08	.000
2. Rarely	303	.05	.03		
3. Occasionally	1090	.09	.09		
4. Most of time	1892	-.08	-.07		
INTERUPT	(Grand mean=.03)				
1. Ever worked	478	-.27	-.26	.15	.000
2. 1-2 times	1224	-.09	-.08		
3. 3-9 times	1378	.07	.06		
4. Never worked	304	.47	.46		

significantly so), related to expected family size. The average expected number of children for husbands belonging to the relative income categories of low, medium, and high are 2.43, 2.39 and 2.35 respectively.

By way of a conclusion to this section, it is safe to say that wife's characteristics, such as education, income and interruptions, excel in their influence on current family size in relation to husband's characteristics. The exceptions to this generalization, however, are husband's education and occupation. The subjective measures used in assessing couples' financial status are less important in explaining variation in fertility. Similar conclusions are drawn from the analysis of expected family size. Husband's relative income (although not significant) exerts negative influence on expected family size and positive influence on current family size.

5.3 Multivariate Analysis of Economic Variables

The preliminary analysis indicated that husband's education, husband's income, and family income are highly correlated with other variables. Therefore, they are eliminated in studying the independent effect of variables in the model. Analysis of the remaining variables revealed the presence of eight possible interactions. The following interactions are statistically significant (F values are in brackets): wife's education with savings (.031); husband's relative income with his occupation (.029); standard of

living with wife's education (.008), savings (.000), wife's income (.024), husband's relative income (.017), interruptions (.022), and husband's occupation (.074). A careful examination of these interactions suggested that the first two interactions (wife's education by savings; husband's relative income by his occupation) are due merely to a statistical artifact of missing values. These two interactions are ignored for further analysis. Of the remaining six interactions, standard of living emerged as a common factor, this finding in turn led to an analysis of the effect of economic variables within the three levels of standard of living.

Table 5.4 presents unadjusted and adjusted deviations for different levels of standard of living and for all three levels combined. The beta weights given in the last row for each variable show the relative importance of each variable when controlled for the remaining variables in the model. The beta weights for the third level ('worse') are noticeably higher than for the other two. This implies that the economic variables in the model seem to be very important in explaining variation for this category when other factors are held constant (R^2= .403). However, caution should be taken in interpreting these effects since some of the cells have smaller frequencies.

From the examination of the effects of wife's characteristics such as education, income and interruptions across different levels of standard of living, it is evident

Table 5.4 Unadjusted and adjusted deviations in current family size(net age) by economic variables within different levels of standard of living.

Variable	BETTER (Grand mean=-.01) N	Unadj.	Adj	SAME (Grand mean=.04) N	Unadj.	Adj	WORSE (Grand mean=.35) N	Unadj.	Adj	ALL LEVELS COMB. N	Unadj.	Adj
WEDUC												
1. 0-8 years	112	.65	.40	150	.41	.21	17	.12	-.23	279	.49	.26
2. 9-12 years	536	.15	.10	973	.09	.03	71	.35	.20	1579	.12	.06
3. 13-15 years	277	-.31	-.22	553	-.08	-.01	42	-.51	-.14	872	-.17	-.09
4. 16+ years	147	-.47	-.25	292	-.38	-.19	12	-.40	-.37	452	-.41	-.20
Eta/beta		.27	.16*		.17	.08*		.23	.12		.20	.10*
WINCOME												
1. LE 7000	170	.04	-.01	309	.18	.13	35	.85	.56	514	.19	.13
2. 7100-12000	152	-.02	-.03	281	-.06	-.03	12	-.48	-.36	445	-.06	-.05
3. 12100-19000	165	-.25	-.11	293	-.23	-.18	19	-.74	-.46	477	-.26	-.17
4. 19100 +	186	-.57	-.30	307	-.60	-.44	11	-.26	-.36	504	-.59	-.39
5. Missing	400	.36	.20	777	.27	.20	65	-.11	-.04	1242	.28	.19
Eta/Beta		.27	.14*		.27	.20*		.31	.21		.26	.17*
HRELINCOME												
1. Low	411	.02	.00	842	-.07	-.02	83	.23	.27	1337	-.02	.00
2. Medium	71	-.26	-.12	145	.10	.15	9	-.37	-.06	224	-.03	.06
3. High	406	-.04	.03	554	.06	.08	17	-.47	-.51	977	.00	.05
4. Missing	184	.15	-.02	427	.02	-.11	33	-.25	-.41	644	.05	-.10
Eta/Beta		.08	.03		.05	.07*		.17	.20*		.02	.04*
HOCCU												
1. Farmer	38	1.04	.78	104	.55	.42	8	.15	.09	150	.66	.53
2. Blue collar	525	.13	.02	940	.13	.06	81	.30	.20	1546	.14	.06
3. White collar	510	-.21	-.08	923	-.20	-.11	53	-.49	-.33	1486	-.22	-.11
Eta/Beta		.21	.13*		.18	.11*		.22	.15		.19	.12*

cont...

	BETTER (Grand mean=-.01)			SAME (Grand mean=.04)			WORSE (Grand mean=.35)			ALL LEVELS COMB.		
	N	Unadj.	Adj	N	Unadj.	Adj	N	Unadj.	Adj	N	Unadj.	Adj
SAVING												
1. Never	204	.25	.13	473	.34	.27	84	-.10	-.14	761	.29	.18
2. Time to time	362	.12	.06	752	-.04	-.04	31	-.36	-.36	1145	.00	-.02
3. Reg. basis	506	-.19	-.09	742	-.18	-.13	27	.74	.85	1275	-.17	-.09
Eta/Beta		.15	.07*		.18	.14*		.22	.25*		.15	.09*
FINSUCESS												
1. Not been sucessful	11	1.53	1.03	56	-.18	-.25	52	.33	.07	117	.34	.09
2. Reasonalbly successful	618	.05	.01	1497	.02	.01	79	-.17	-.02	2193	.02	.01
3. Very successful	443	-.11	-.04	415	-.04	.01	11	-.29	-.15	868	-.09	-.03
Eta/Beta		.14	.09*		.03	.04		.15	.04		.07	.02
FNCLPLAN												
1. Never	22	.20	-.05	57	.13	.02	13	2.01	1.39	92	.44	.25
2. Rarely	78	.16	.10	171	.07	-.03	30	-.17	-.27	279	.09	-.01
3. Occasionaly	292	.08	.02	685	.07	.05	41	-.13	-.03	1017	.07	.03
4. Most of time	680	-.06	-.02	1055	-.06	-.03	58	-.27	-.15	1793	-.07	-.03
Eta/Beta		.07	.03		.06	.03		.38	.26*		.09	.04
INTERUPT												
1. Ever worked	147	-.29	-.13	294	-.36	-.18	14	-.42	-.22	455	-.34	-.17
2. 1-2 times	411	-.24	-.10	705	-.14	.00	44	-.30	-.20	1160	-.18	-.05
3. 3-9 times	414	.18	.06	810	.17	.02	63	-.22	-.12	1288	.15	.02
4. Never worked	99	.64	.35	158	.43	.24	21	1.61	.95	278	.60	.39
Eta/Beta		.23	.11*		.20	.08*		.39	.23		.22	.11*
R Square			.156			.131			.403			.128

that although their associations with fertility are strong (shown by eta values), adjustment for the effects of other variables reduces the importance of these variables considerably, as shown by the beta values. Wife's education is inversely related to fertility among the respondents who felt their standard of living is 'better' or 'the same' in comparison to others in similar age groups. Note also, for these two levels, adjustments result in a substantial reduction in mean number of children for women with 0-8 years of education, while that for women with 16 or more years of education result in increasing the mean number of children. In all these cases, the adjustments involve .20 or more children. A similar case arises, when the analysis is carried by combining all three levels, i.e. when adjustment is made for standard of living in addition to other variables in the model. For the third level ('worse') neglecting the cases with sample sizes less than 20 provides a similar pattern; however, education is not related to fertility for this group of women.

The relative importance of wife's income increases with the level of standard of living. The relationship between wife's income and fertility is inverse, but significant only for the first two levels. Once again, adjustments for other variables result in significant increase in average number of children at higher income levels. Despite such an increment, the average number of children is still lower than the grand mean for these two levels.

The wife's commitment to work exhibits greater reduction in deviation once the adjustments are made for other variables; reduction is more than half in most cases. The effect is still stronger for the two extreme groups, i.e. 'ever worked' and 'never worked'. For the former the effect is to reduce, while for the latter the effect is to increase, the average number of children. This is in conjunction with the findings based on all three levels combined or adjusted for standard of living.

With regard to husband's relative income and husband's occupation, the former exerts significant influence on fertility for the last two categories, while the similar influence for the latter appears to be true for the first two categories of standard of living. The beta weights indicate that husband's occupation seems to be considerably more important than husband's relative income in explaining variation in current family size. No clear pattern emerges in relative income when adjustments are made for other variables. In other words, the relationship with fertility is non-linear within the three levels of standard of living. Among respondents viewing their standard of living as 'better' than that of others in the same age groups, medium relative income groups tend to have a lower average number of children; for respondents viewing their standard of living as 'the same', relative income shows positive relationship to fertility; for respondents viewing their standard of living as 'worse' the relative income is

inversely related to fertility. The effects of missing value categories show that the average number of children would be lower once adjustments were made for other variables. In general, this finding provides some support for the positive relationship between relative income and fertility observed in earlier studies.

The husband's occupational status is inversely related to fertility. Farmers and blue collars have more children than white collar workers. The real contrast, however, exists between farmers and white collars. The difference in average number of chidren are .86 and .53 for 'better' and 'same' categories of standard of living respectively.

Subjective measures, such as savings, financial success and financial planning, provide some interesting results. Among these three measures savings appear to have significant influence on family size in all three levels of standard of living, while the remaining two measures are significant in only one of the three levels. Even those significant effects for the latter measures may be due largely to greater deviation shown by cases with smaller sample size, particularly for the variable financial success. Paradoxically, respondents who feel their standard of living is 'worse' and save money on a regular basis have more children. This supports the speculation, made earlier, that couples might have reached this attitude toward their standard of living by having more children and being forced to save money on a regular basis. This notion is also to

some extent supported by a closer examination of couples' financial plans. Those who seldom make any financial plans are likely to have fewer children than couples making financial plans most of the time. These two measures (savings and financial planning) appear to be more important in explaining variation in fertility among the respondents feeling 'worse' about their living standard.

To summarize the results of multivariate analysis, it is adequate to say that economic variables are relatively more important in explaining variation in fertility, particularly among the respondents who feel their living standard is comparatively 'worse' than others' (R^2=.403). Even after adjustments made for other variables, wife's characteristics, such as income, education, and interruptions, continue to play an important role in explaining variation in family size. This is found to be true even when the missing values are omitted in multiple regression analysis. On the other hand, if we consider husband's characteristics, such as relative income and occupational status, the latter appears to be more important in explaining variation in fertility. The subjective measures, in general, are seen to be least important in the economic analysis of fertility (except savings).

In conclusion to this chapter, we could say that economic determinants are relatively more important than the structural determinants analysed in chapter 4. However, the variations by the economic variables are not sufficient to

be identified as the primary determinants of fertility. In general, variables dealing with wife's characteristics make a more substantial contribution in explaining variation in current family size than do other variables. This is not surprising, given the fact that the decision about the particular number of children has a greater impact on her and that she frequently has greater control over the final outcome. Moreover, wives' reports about their partners' characteristics are likely to be erroneous. For example, studies demonstrate that women's reports about their partners do not agree with reports from the men themselves. In some cases, the discrepancies between men's and women's reports of the same event are overwhelming (Beckman, 1980; Heer, 1962; Kenkel, 1957; Nathanson, 1977; Saflio's-Rothschild, 1969). Husband's relative income, used successfully in many studies to ascertain variation in family size, appears to be less important in the present study. Although there is some support for the positive relationship between relative income and fertility, the pattern is not clear. There is also some indication that subjective measures, particularly savings and financial planning, at higher levels tend to increase the average number of children for respondents who feel their living standard is 'worse' than others'. This inturn leads us question the validity of the approach, suggested by Freedman (1963), of using subjective measures as a cause rather than as a consequence. Overall, the traditional economic

variables such as education, income, occupation etc., produce the expected relationship to fertility, while for the subjective measures the evidence is less than conclusive.

Chapter 6

SOCIOPSYCHOLOGICAL AND BIOLOGICAL DETERMINANTS OF FERTILITY

Researchers studying the determinants of fertility in recent years have devoted very little attention to sociopsychological determinants of fertility. The role of psychological factors in fertility analysis has been criticised and underestimated. Mauldin (1965) cogently suggests that "significant relationships between psychological factors and fertility have not been found" and "perhaps such relationships do not exist" (p. 9). Other researchers hold similar opinions (Bumpass and Westoff, 1970; Kiser and Whelpton, 1958; Whelpton et al., 1966). Lack of success by these researchers may be attributed more to the procedures used to collect data than to any actual failure of psychological variables (Bagozzi and Van Loo, 1978). Moreover, psychological variables are contaminated by greater amounts of measurement errors, and the methods adopted by these researchers fail to take this factor into account.

Nevertheless, given that structural explanations are insufficient and concomitant with the inadequate explanation by economic factors, one needs to focus on sociopsychological determinants to understand fertility phenomena. After all, fertility is a relatively private matter, and what goes on in couples' minds regarding the numbers they want can be explained in terms of psychological determinants by constraining the environmental factors. As

Grindstaff (in Veevers, 1983) rightly points out, "to account for the future variations in fertility, one of the most fruitful areas for investigation is at the micro-level of the social psychological factors associated with individual decision-making. Exactly which components are relevant is not at all obvious, but many potential dimensions could be suggested" (p. 30).

In this chapter an attempt is made to construct sociopsychological concepts in order to study the determinants of fertility. The rationale for including biological factors is that, apart from the obvious link between psychology and biology, these factors combined also form an intermediate component of the causal model that will be discussed in the next chapter.

As mentioned earlier, researchers, until recently, have been quite skeptical about the role of sociopsychological factors in fertility; as a result only a handful of studies is available in this area. Even the studies available on this matter are rudimentary in terms of developing psychological concepts necessary to study fertility. However, the focus here will be on two sociopsychological dimensions that have received much attention in demographic research. These are gender or sex roles and the value of children.

Role theory used in sociological research, in general, takes the pattern of relationship among people in groups as the unit of analysis (Jackson, 1972). However, for role

theorists involved in fertility research, the family is the most important unit of analysis. Rainwater (1960, 1965) is the first person to document the impact of the nature of marital relationship on fertility. He finds that psychological needs and motivational factors have an influence on family size. For lower class fathers, children are seen as an important source of self-esteem. For lower class mothers, having children provides feelings of accomplishment and pride. He also finds that couples who experience mutuality in their marriage tend to use more effective contraception. As well, he observes a strong (positive) association "between family size desires and how exclusively the wife sees herself as oriented to husband and outside interests as opposed to children"(Rainwater, 1965:191).

Although many researchers have suggested the possible link between marital role relationships and fertility control (Hass, 1972; Hoffman and Wyatt, 1960; Scanzoni and McMurry, 1972), very little research has examinined these effects. Most research focuses on female role definitions. Tobin (1976), for example, operationalizes female role definition through attitudes toward career, housework, child-care etc. and finds that it varies with education. He also reports that wives who view their role primarily as domestic tend to use less contraceptives than those who have modern orientations.

Scanzoni (1975, 1976) is one of the few researchers to study the effect of marital structure on fertility by taking the joint role of husband and wife as the unit of analysis. Using correlational and regression analysis, he finds that sex-role modernity is positively related to age at marriage, current full-time employment of the wife and use of contraceptives. It is negatively related to the number of children intended. In his 1976 work, he attempted to study the relationship between gender roles and the process of fertility control. More specifically, he incorporated egalitarianism into the joint gender role definition. He finds that egalitarianism is determined by the family of orientation. While the degree of egalitarianism for husbands is influenced by education and father's socioeconomic status, for wives it is determined by education, father's and mother's education, and father's socioeconomic status. By combining the individual reponses of husband and wife with regard to joint role relationships, Scanzoni finds that in addition to background characteristics, desired and intended number of births is inversely related to sex-role egalitarianism. Thus, he concludes that the more modern and equal the relationship between husband and wife, the lower the desired and intended family size.

Bagozzi and Van Loo (1978, 1980) study fertility behaviors as a process of social exchange or influence occuring within the family. The model developed by them takes the husband and wife relationship as the unit of

analysis and emphasizes the couple's interactions. The social exchange is measured by the degree of gender role egalitarianism between husband and wife. Bagozzi and Van Loo also find that "the more the husband and wife desire the rewards associated with egalitarian marriages , the less they will desire the benefits that accompany additional children and the smaller will be their desired and intended family size" (p. 119). Further, the educational status of husband and wife influences fertility only through its effect on gender role egalitarianism.

Despite such an established relationship between sex roles and fertility, some researchers question the validity of causal direction. Turner and Simmons (1977), for example, argue that fertility may in fact influence access to and attitudes toward 'modern' roles options for women, and this may explain the correlation between sex role attitudes and fertility. They further argue that sex role attitudes and behaviours may be influenced by fertility, but that this influence may be negligible. Their analysis testing this causal direction reveals that sex role attitudes influence fertility and not vice versa. They also report that the value of children (measured by 8 items dealing with the positive aspect of children), is positively correlated with the number of children ever born. A large group of mothers with high value of children scores and traditional role standards favor relatively large families. Also, a smaller group of mothers, who surprisingly combine high value of

children scores with modern role standards want even more children. A similar observation is made by Hobart (1981). He finds that Francophone women prefer larger families because of a liberal pattern that includes egalitarian attitudes.

Another factor often involved in the fertility decision-making process is the value of children to parents. Parents' perceptions of the costs and benefits of children and the value they attach to these costs and benefits constitute their general attitude toward having children. The value of children to parents may be economic or psychological. A great deal of research has been devoted to identifying and measuring the perceived costs and benefits (both economic and noneconomic) of children (Arnold et al., 1975; Bulatao, 1981; Fawcett, 1972; Hoffman and Hoffman, 1973). Studies based on developed countries (eg. Fawcett, 1972) report that respondents on the benefit side see children as providers of love and companionship, as a source of fun and excitement, or simply as a unique experience in one's life and as a bond between husband and wife. On the negative side (cost), children place constraints on one's freedom and flexibility, cause heavy financial burden; and create stress between husband and wife. However, the costs and benefits of children vary according to parities of women. In other words, early childbearing is governed by normative forces and social constraints that exclude a free, rational calculation of costs and benefits by the couple, whereas later childbearing does become subject to rational

calculation (Bulatao, 1981; Fawcett et al. 1972). In general, whatever increases the cost of rearing children or reduces the benefit of children oprerates to reduce fertility, whereas whatever increases the benefit of children or reduces the cost of children operates to increase fertility. Bulatao and Fawcett (1983), however, argue that not all values (benefits) relate to fertility positively; nor do all disvalues (costs) relate to it negatively.

6.1 Formulation of Sociopsychological Concepts

The two concepts be used in this chapter are gender role egalitarianism and value of children. These concepts have been formulated by means of various indicators available in the Canadian Fertility Survey. Some of these indicators (questions) have been used in earlier studies to construct similar concepts.

Gender role egalitarianism is measured in terms of the actual sharing of housework and childcare by the couples. The actual question and response categories used for this item are "Who does the cooking, housework etc. (1) always you... 2) mostly you... 3) equally ... 4) mainly partner." About six different questions are used to assess gender role egalitarianism (Q702a, Q702b, Q703a, Q703b, Q703c, and Q910). Although one could compute a composite index for gender role egalitarianism based on responses to these questions, studies report (Presser, 1977) a disparity in the

sharing of certain activities between husband and wife. For this reason, we analyse the responses to each question separately. In situations where the respondents did not respond to a question their attitudes toward sharing such activities are substituted (Q218, Q219). The preliminary analysis of data with this substitution did not affect the results significantly; therefore, they are retained in the analysis to reduce the number of missing cases. However, one of the limitations in using this measure is that the gender role egalitarianism in a way depends upon the number of children, but this effect is comparatively weaker (eg. Turner and Simmons, 1977). The effect of egalitarianism will be examined within different levels of relative occupational status in order to verify Davis's (1984) claim. According to him one way to remedy the weakness of the egalitarian system is to equalize the rights and obligations of the two sexes in both the workplace and the home. If women achieve a higher position in the workplace, men will be able to share half the burden at home. To him, as long as husband and wife are unequal in the labor market, they will inevitably be unequal at home, and the one who contributes less by employment will contribute more at home. In order to verify this theory we need to relate the wife's occupational status to her husband's. Wife's occupational statuses are coded similarly to husband's and then divided into three groups; low, medium and high in relation to husband's occupational status.

The second concept, value of children, is measured by the respondents' subjective feeling of rewards and costs associated with having children. More specifically, respondents were asked whether they strongly agree, agree, disagree, or strongly disagree with statements such as 'having a child provides happiness or a goal in life etc.,' in order to assess the benefits; and statements such as 'having children distance the spouses' or 'becoming parents means heavy responsibility,' in order to assess the costs having of children These indicators are in a way similar to the ones used by previous researchers. The subjective attitudes toward benefits or costs associated with having children also vary according to women's labor force status. Hence, the influence of subjective benefits and costs of having children will be examined within the level of current labor force status. This would enable us to understand whether the taste for children varies with current labor force participation. Since the variables used to measure the value of children are attitudinal, some women may base their opinions on past experience while others may draw purely on hypothetical situations. To circumvent this problem adjustment is also made for the period of exposure to childbearing (DURMAR).

6.2 Bivariate Analysis of Sociopsychological Factors

Table 6.1 presents the Pearson correlation coefficients for various sociopsychological variables. Some of the high correlation coefficients include the associations between HOUSWORK and SHARCOOK (.49), and between CHLDCARE and CCLOTHES(.50). These correlations are not large enough to create any multicollinearity problems.

The variables measuring gender role egalitarianism (SHARCOOK, HOUSWORK, CHLDCARE, CCLOTHES, SCHLWORK, DECISION) show the expected relationship with fertility. In accordance with variable categories, lower score means 'traditional' and higher score means 'egalitarian'. The fourth category (mostly/always partners) contains relatively few cases; therefore, its effect is placed in the 'egalitarian' category. One could consider response to this category as an indicator of the 'liberal' status of women in the household. Financial decision-making, on the other hand, is traditionally done by men; therefore, for the DECISION variable a higher score indicates 'traditional' and a lower score, 'egalitarian/ liberal,' status of women.

The Pearson correlation coefficients for the above measures are statistically significant. As the egalitarianism between husband and wife increases, the current and expected number of children decreases. The variables directly related to children (CHLDCARE, CCLOTHES, SCHLWORK) have stronger association with fertility than others. Concomitantly, these variables are also strongly

Table 6.1 Pearson correlation coefficients for sociopsychological variables.

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.1158 (3674) P= .000	-.0994 (3674) P= .000	-.2859 (3674) P= .000	-.2474 (3674) P= .000	-.1320 (3670) P= .000	.0512 (3658) P= .001	-.0089 (3625) P= .296	.0269 (3673) P= .051	.0275 (3639) P= .048
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.0799 (3659) P= .000	-.0553 (3659) P= .000	-.2002 (3658) P= .000	-.1495 (3658) P= .000	-.0903 (3654) P= .000	.0446 (3644) P= .004	-.0186 (3611) P= .132	.0198 (3658) P= .115	.0114 (3625) P= .246
SHARCOOK	-.1158 (3674) P= .000	-.0799 (3659) P= .000	1.0000 (3681) P= .	.4862 (3681) P= .000	.2546 (3680) P= .000	.2123 (3680) P= .000	.1403 (3676) P= .000	-.0598 (3665) P= .000	-.0345 (3631) P= .019	-.0362 (3679) P= .014	-.0707 (3645) P= .000
HOUSWORK	-.0994 (3674) P= .000	-.0553 (3659) P= .000	.4862 (3681) P= .000	1.0000 (3681) P= .	.3164 (3680) P= .000	.2456 (3680) P= .000	.2202 (3676) P= .000	-.1100 (3665) P= .000	-.0724 (3631) P= .000	-.0747 (3679) P= .000	-.0743 (3645) P= .000
CHLDCARE	-.2859 (3674) P= .000	-.2002 (3658) P= .000	.2546 (3680) P= .000	.3164 (3680) P= .000	1.0000 (3680) P= .	.4975 (3680) P= .000	.4025 (3676) P= .000	-.0719 (3664) P= .000	-.0822 (3631) P= .000	-.0678 (3678) P= .000	-.0997 (3644) P= .000
CCLOTHES	-.2474 (3674) P= .000	-.1495 (3658) P= .000	.2123 (3680) P= .000	.2456 (3680) P= .000	.4975 (3680) P= .000	1.0000 (3680) P= .	.3824 (3676) P= .000	.0254 (3664) P= .062	-.0512 (3631) P= .001	-.0437 (3678) P= .004	-.0523 (3644) P= .001
SCHLWORK	-.1320 (3670) P= .000	-.0903 (3654) P= .000	.1403 (3676) P= .000	.2202 (3676) P= .000	.4025 (3676) P= .000	.3824 (3676) P= .000	1.0000 (3676) P= .	.0095 (3660) P= .282	-.0205 (3627) P= .108	-.0423 (3674) P= .005	-.0738 (3641) P= .000
DECISION	.0512 (3658) P= .001	.0446 (3644) P= .004	-.0598 (3665) P= .000	-.1100 (3665) P= .000	-.0719 (3664) P= .000	.0254 (3664) P= .062	.0095 (3660) P= .282	1.0000 (3665) P= .	.0535 (3617) P= .001	.0027 (3664) P= .434	-.0004 (3631) P= .491
DISTANCE	-.0089 (3625) P= .296	-.0186 (3611) P= .132	-.0345 (3631) P= .019	-.0724 (3631) P= .000	-.0822 (3631) P= .000	-.0512 (3631) P= .001	-.0205 (3627) P= .108	.0535 (3617) P= .001	1.0000 (3631) P= .	.0702 (3631) P= .000	.0405 (3603) P= .008
BURDEN	.0269 (3673) P= .051	.0198 (3658) P= .115	-.0362 (3679) P= .014	-.0747 (3679) P= .000	-.0678 (3678) P= .000	-.0437 (3678) P= .004	-.0423 (3674) P= .005	.0027 (3664) P= .434	.0702 (3631) P= .000	1.0000 (3679) P= .	.0671 (3644) P= .000
OPCOST	.0275 (3639) P= .048	.0114 (3625) P= .246	-.0707 (3645) P= .000	-.0743 (3645) P= .000	-.0997 (3644) P= .000	-.0523 (3644) P= .001	-.0738 (3641) P= .000	-.0004 (3631) P= .491	.0405 (3603) P= .008	.0671 (3644) P= .000	1.0000 (3645) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
GOAL	.1402	.1546	-.0676	-.0627	-.0781	-.0594	-.0421	.0048	-.0817	.1097	-.0186
	(3649)	(3634)	(3655)	(3655)	(3655)	(3655)	(3651)	(3641)	(3616)	(3655)	(3624)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .006	P= .386	P= .000	P= .000	P= .132
AFFECTIN	.0819	.0935	-.0348	-.0380	-.0440	-.0576	-.0330	.0178	-.1715	.1563	.0138
	(3632)	(3617)	(3638)	(3638)	(3637)	(3637)	(3633)	(3624)	(3599)	(3638)	(3616)
	P= .000	P= .000	P= .018	P= .011	P= .004	P= .000	P= .023	P= .142	P= .000	P= .000	P= .204
HAPPINES	.2059	.2379	-.0857	-.0725	-.1259	-.1141	-.0572	.0266	-.0636	.0172	.0015
	(3663)	(3648)	(3670)	(3670)	(3669)	(3669)	(3665)	(3654)	(3620)	(3668)	(3637)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .054	P= .000	P= .150	P= .465

	GOAL	AFFECTIN	HAPPINES
GOAL	1.0000	.4187	.3193
	(3655)	(3623)	(3644)
	P= .	P= .000	P= .000
AFFECTIN	.4187	1.0000	.1951
	(3623)	(3638)	(3627)
	P= .000	P= .	P= .000
HAPPINES	.3193	.1951	1.0000
	(3644)	(3627)	(3670)
	P= .000	P= .000	P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

associated among themselves. One should not be sanguine about the association of these variables with fertility, since such role relationships will also be a function of number of children in the family. Nevertheless, these measures have been used in previous research, and the results support the expected relationship with fertility.

On the other hand, the variables measuring the value of children (DISTANCE, BURDEN, OPCOST, GOAL, AFFECTION, AND HAPPINESS) produce mixed results. On the subjective cost side of children, respondents feeling that children tend to distance spouses (DISTANCE) have fewer children, while the respondents feeling that children mean heavy responsibility (BURDEN) and reduce work opportunities outside the home have more children. Among these three variables, DISTANCE is not significant (although the direction is as expected), and the other two variables (BURDEN and OPCOST) are barely significant, but the directions are not expected.

In contrast to subjective cost of children, the perceptions of subjective benefits of having children produce expected relationship with fertility. Respondents agreeing that a child provides goals, affection and happiness in life are likely to have more children. The direction of these variables are as expected and the magnitude of these coefficients is much greater than that of the coefficients for subjective cost of children.

Looking at the correlations of duration of marriage with variables representing gender role egalitarianism and

value of children provides some interesting results. Women in marriage union for a longer period of time tend to assume the traditional role in sharing household chores and childcare. These women are also more aware of the greater costs and lesser benefits associated with having children. This is not surprising, given the fact that women married for a longer period of time might have better experience of the rewards and punishments associated with having children. In the present context, the experiences of these women with children do not appear to be pleasant; the subjective costs outweigh the subjective benefits of children.

Still continuing with the bivariate analysis, table 6.2 presents the relationship between fertility and sociopsychological variables from the MCA analysis. The results are not significantly different from those of correlation analysis. Nevertheless, the effects presented for each category of the independent variables enable us to understand the relationship better. For example, the effects of supervision of children's school work and financial decision making on fertility appear to be non-linear. It is also evident that husbands/partners take very little responsibility in terms of sharing housework or taking care of children or shopping for children's clothes in relation to their participation in other activities.

In general, variables dealing with gender role egalitarianism indicate that couples in joint role relationships are likely to have a lower number of children.

Table 6.2 Unadjusted and adjusted deviations for current family size by sociopsychological variables.

Variable	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
SHARCOOK					
1. Always you	911	.11	.08	.11	.000
2. Mostly you	1825	.03	.04		
3. Equally	530	-.19	-.17		
4. Mostly partner	118	-.50	-.45		
HOUSWORK					
1. Always you	720	.11	.07	.10	.000
2. Mostly you	1711	.05	.05		
3. Equally	901	-.16	-.13		
4. Mostly partner	51	-.47	-.43		
CHLDCARE					
1. Always you	637	.40	.38	.28	.000
2. Mostly you	1402	.22	.21		
3. Equally	1328	-.42	-.41		
4. Mostly partner	17	-.12	-.10		
CHLDCLOTHES					
1. Always you	1092	.25	.23	.26	.000
2. Mostly you	1137	.20	.20		
3. Equally	1136	-.45	-.42		
4. Mostly partner	18	.39	.42		
SCHLWORK					
1. Always you	436	.32	.26	.16	.000
2. Mostly you	736	.19	.16		
3. Equally	2065	-.16	-.13		
4. Mostly partner	142	.28	.24		
DECISION					
1. Mainly women	314	.15	.14	.11	.000
2. Equally shared	2672	-.06	-.06		
3. Mostly partner	319	.27	.26		
4. Always partner	65	.51	.44		

cont.....

Variable	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
DISTANCE					
1. S. Disagree	1064	.04	.05	.04	.144
2. Disagree	1680	-.04	-.04		
3. Agree	543	.05	.05		
4. S. Agree	53	-.20	-.21		
BURDEN					
1. S. Disagree	59	-.07	-.04	.04	.206
2. Disagree	152	-.20	-.19		
3. Agree	1257	.00	.01		
4. S. Agree	1914	.02	.01		
OPCOST					
1. Not at all	454	.02	.02	.04	.079
2. Not very much	779	-.10	-.08		
3. Fair amount	1292	.01	.02		
4. A lot	826	.06	.04		
GOAL					
1. S. Disagree	187	-.56	-.57	.14	.000
2. Disagree	707	-.18	-.19		
3. Agree	1333	.07	.07		
4. S. Agree	1134	.12	.13		
AFFECTION					
1. S. Disagree	51	-.80	-.80	.10	.000
2. Disagree	434	-.15	-.18		
3. Agree	1488	.01	.01		
4. S. Agree	1370	.06	.07		
HAPPINESS					
1. Not at all impt	225	-.53	-.52	.19	.000
2. Not very impt	582	-.33	-.33		
3. Important	1026	.00	.01		
4. Very impt	1540	.21	.19		

However, there is some evidence that the couples may have a smaller family size if the activities such as cooking and housework are done mainly by the husband/partner. Probably these activities are least likely to be enjoyed by husbands. On the other hand, husbands' involvement in the supervision of children's school work and in financial decision making encourages them to have more children. Overall, the variables directly related to children are likely to explain a significant portion of variance in current family size, as shown by the eta coefficients.

Turning to the value of children, it is clear that the subjective benefits of children are linearly related to fertility, while the results are mixed for the subjective costs of children. Even adjustments for duration of marriage do not alter these relationships. This leads us to question the predictive ability of the subjective cost of children. The results from expected family size, surprisingly, were quite similar to the ones presented here and are therefore not discussed.

6.3 Multivariate Analysis of Sociopsychological Variables

Preliminary analysis of the variables associated with gender role egalitarianism did not demonstrate the presence of any significant interactions among the variables. Nonetheless, the effects of sociopsychological variables are examined within different levels of the relative occupational status of the wife for the reasons mentioned

earlier. Adjustments for duration of marriage have not produced any dramatic effect and are therefore not included in table 6.3.

First we need to examine whether or not the couples' participation in various activities differ within the levels of wife's occupational status in relation to husband's occupational status. The percentages given in table 6.3 are used for this purpose. The results from this table can be summarized as follows: 1) a greater percentage of couples participate equally in activities such as financial decision-making and supervision of children's school work. A moderate participation is observed in other activities related to children and to some extent in sharing housework and; a low participation in cooking. 2) In general, with the exception of financial decision-making and supervision of children's school work, women contribute more to all other activities. 3) Nevertheless, there is some indication that equal participation tends to increase with wife's relative occupational status; but the real increment seems to occur between low and medium categories. Surprisingly, even when the wives' occupational statuses are higher than husbands', their participation in traditional activities does not seem to decline; rather, it increases in some cases.

When the various activities are related to current family size variables such as SHARCOOK,HOUSWORK produce substantial reduction in mean number of children among the 'mostly partners' category. Even after the adjustments for

Table 6.3 Unadjusted and adjusted deviations for current family size within different levels of relative occupational status of wife by gender role egalitarianism

Variable	LOW (mean=.00) N	%	Unadj	Adj	MEDIUM (mean=-.17) N	%	Unadj	Adj	HIGH (mean=-.10) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=-.06) N	%	Unadj	Adj**
SHARCOOK																
1. Always you	426	28	.02	-.05	107	24	.08	.00	299	22	.11	.11	832	25	.06	.02
2. Mostly you	818	54	.07	.05	240	54	.09	.05	722	54	.02	-.01	1780	54	.05	.02
3. Equally	231	15	-.17	-.02	82	18	-.26	-.13	247	19	-.10	-.05	560	17	-.16	-.05
4. Mostly partner	51	3	-.47	-.30	16	4	-.57	-.12	56	4	-.38	-.25	123	4	-.45	-.24
Eta/Beta			.10	.06			.16	.07			.09	.07			.10	.05*
HOUSWORK																
1. Always you	345	23	.04	-.07	74	17	.03	-.14	233	18	-.01	-.24	652	20	.03	-.14
2. Mostly you	776	51	.06	.02	218	49	.14	.04	663	50	.06	.01	1657	50	.07	.02
3. Equally	395	26	-.14	.04	139	31	-.17	.04	396	30	-.06	.13	929	28	-.11	.08
4. Mostly partner	11	.7	-.70	-.40	13	3	-.64	-.28	32	2	-.36	-.09	56	2	-.53	-.20
Eta/Beta			.08	.04			.16	.08			.07	.11*			.09	.07*
CHLDCARE																
1. Always you	288	19	.29	.24	67	15	.46	.28	220	17	.36	.25	574	17	.34	.24
2. Mostly you	638	42	.26	.18	171	38	.33	.20	491	37	.29	.15	1300	39	.28	.18
3. Equally	593	39	-.42	-.31	206	46	-.43	-.26	606	46	-.37	-.21	1404	43	-.40	-.26
4. Mostly partner	7	.5	-.32	-.23	1	.2	1.55	1.48	8	.6	.16	.02	16	.5	.03	.06
Eta/Beta			.28	.20*			.37	.23*			.29	.17*			.30	.19*

cont...

Variable	LOW (mean=.00) N	%	Unadj	Adj	MEDIUM (mean=-.17) N	%	Unadj	Adj	HIGH (mean=-.10) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=-.06) N	%	Unadj	Adj**
CHLDCLOTHES																
1. Always you	492	32	.20	.08	123	28	.36	.15	395	30	.32	.23	1009	31	.27	.14
2. Mostly you	519	34	.23	.15	120	27	.34	.26	420	32	.25	.18	1059	32	.25	.18
3. Equally	507	33	-.42	-.23	199	45	-.43	-.25	501	38	-.47	-.34	1208	37	-.45	-.28
4. Mostly partner	8	.5	-.02	.11	3	.7	.44	.05	8	.6	.56	.39	18	.5	.29	.20
Eta/Beta			.25	.14*			.35	.21*			.32	.23*			.29	.18*
SCHLWORK																
1. Always you	193	13	.28	.09	42	9	.70	.43	159	12	.27	-.08	394	12	.33	.07
2. Mostly you	302	20	.17	-.03	74	17	.32	.00	300	23	.25	.07	676	20	.22	.01
3. Equally	953	62	-.13	-.03	311	70	-.20	-.09	833	63	-.17	-.03	2096	64	-.16	-.04
4. Mostly partner	78	5	.24	.22	18	4	.44	.47	32	2	.64	.45	128	4	.38	.29
Eta/Beta			.14	.05			.29	.16*			.20	.07*			.18	.06*
DECISION																
1. Mainly women	134	9	.04	.01	36	8	.04	-.23	131	10	-.04	-.11	302	9	.00	-.06
2. Equally shared	1191	78	-.05	-.04	373	84	-.05	-.01	1081	82	-.03	-.01	2644	80	-.04	-.03
3. Mostly partner	175	11	.33	.26	28	6	.50	.39	86	6	.16	.05	289	9	.31	.22
4. Always partner	27	2	.12	.20	7	2	.20	.18	25	2	.75	.75	59	2	.40	.40
Eta/Beta			.10	.08*			.12	.11*			.10	.10*			.10	.08*
R Square				.109				.221				.147				.130

* The effect of these variables are significant at least at .10 level

** Adjustments are made for other independent variables and relative occupational status of wife.

other variables the relationship is linear for SHARCOOK while it is nonlinear for HOUSWORK. More specifically, the adjustment reduces the mean number of children if the housework is always done by either spouse. A similar pattern emerges within the different levels of relative occupational status of wife. Note also, couples sharing household work equally are likely to have more children when other factors are taken into consideration.

The effects for the remaining variables indicate that couples in joint role relationships are likely to have a lower mean number of children than couples in segregated role relationships. Not surprisingly, the average number of children is likely to be lower among the women in medium and higher relative occupational categories, provided financial decisions are made mainly by these women. Women belonging to these two categories may have education equal to or greater than their partners, so, in a way the effects could be confounded by education. In general, controlling for other variables substantially reduces deviations among variables directly related to children (CHLDCARE, CCLOTHES, SCHLWORK). Despite such reductions, these variables exhibit stronger effect and explain greater variation in current family size. The variation (R^2) in fertility explained by all the variables in the model is equal to that explained by economic and structural variables discussed in earlier chapters.

With a few exceptions, there is a great deal of evidence that couples in joint role relationships are likely to have fewer children than those in segregated role relationships. The findings, in general, concur with those of the studies reviewed earlier. At the same time one should not be overly complacent, since there is no consistent pattern within the levels of relative occupational status of wife with regard to fertility. Also, in testing Davis's hypothesis one would anticipate that couples with egalitarian status outside the home will also participate equally at home. There is some support for this, particularly in the medium level, where the percentages for 'equal' categories are slightly higher than in the others. Nevertheless, there is a strong indication that no matter what the occupational status of wife is in relation to husband, a sizeable portion of women engage in traditional duties. However, a point should be made at this juncture. Since about 44 percent of the women are currently not working, and the occupational status used here refers only to their last occupation, one may not clearly understand the dynamics of relationship between fertility and the variables under study. To circumvent this problem we employ the couples current labor force status.

Table 6.4 is used to elucidate whether or not the one who contributes less by employment contributes more at home. There is some evidence for this relationship. When we compare the households in which only one spouse works, we

Table 6.4 Unadjusted and adjusted deviations for current family size within couples labor force status by gender role egalitarianism

Variable	BOTH SPOUSES WORK (mean=-.20) N	%	Unadj	Adj	HUSBAND ONLY WORK (mean=.33) N	%	Unadj	Adj	WIFE ONLY WORK (mean=-.05) N	%	Unadj	Adj
SHARCOOK												
1. Always you	393	23	.08	.00	448	34	.05	.06	23	15	-.32	-.32
2. Mostly you	938	54	.03	.02	753	56	.03	.02	63	41	.21	.23
3. Equally	325	19	-.07	-.00	124	9	-.27	-.23	47	31	-.20	-.09
4. Mostly partner	82	5	-.40	-.19	11	.8	-1.08	-.88	21	14	.18	-.14
Eta/Beta			.09	.04			.11	.09*			.16	.15
HOUSWORK												
1. Always you	289	17	.09	-.08	372	28	-.02	-.17	13	8	-.18	.07
2. Mostly you	840	49	.05	-.01	723	54	.03	.03	71	46	.06	-.20
3. Equally	568	33	-.09	.06	233	17	-.03	.21	58	38	-.11	.09
4. Mostly partner	32	2	-.39	-.13	7	.5	-1.37	-1.00	11	7	.39	.74
Eta/Beta			.08	.05			.08	.12*			.10	.18
CHLDCARE												
1. Always you	266	15	.39	.25	286	21	.24	.18	33	21	.14	.09
2. Mostly you	691	40	.28	.17	621	47	.11	.07	45	29	.75	.50
3. Equally	771	44	-.39	-.24	423	32	-.31	-.22	74	48	-.51	-.33
4. Mostly partner	9	.5	-.08	-.11	5	.4	-.31	-.15	2	1	-.08	-.55
Eta/Beta			.32	.19*			.18	.13*			.39	.26*

cont...

Variable	BOTH SPOUSES WORK (mean=-.20) N	%	Unadj	Adj	HUSBAND ONLY WORK (mean=.33) N	%	Unadj	Adj	WIFE ONLY WORK (mean=-.05) N	%	Unadj	Adj
CHLDCLOTHES												
1. Always you	517	30	.30	.17	468	35	.17	.10	54	35	.14	-.02
2. Mostly you	593	34	.24	.18	457	34	.10	.07	38	25	.69	.47
3. Equally	618	36	-.49	-.32	405	30	-.31	-.20	60	39	-.56	-.27
4. Mostly partner	10	.6	.41	.31	5	.4	.12	.14	1	.6	.36	-.53
Eta/Beta			.33	.22*			.16	.11*			.36	.21*
SCHLWORK												
1. Always you	204	12	.36	.03	180	13	.22	.09	24	16	.36	.22
2. Mostly you	362	21	.21	-.01	319	24	.09	.03	29	19	.78	.33
3. Equally	1062	62	-.16	-.02	792	59	-.12	-.06	96	62	-.35	-.17
4. Mostly partner	86	5	.30	.24	45	3	.51	.44	5	3	.61	.33
Eta/Beta			.19	.05			.13	.08*			.34	.16
DECISION												
1. Mainly women	159	9	.08	.02	109	8	-.01	-.03	28	18	.63	.56
2. Equally shared	1395	80	-.05	-.04	1055	79	-.04	-.04	117	76	-.13	-.12
3. Mostly partner	155	9	.29	.22	143	11	.25	.23	6	4	-.28	-.49
4. Always partner	29	2	.63	.57	28	2	.46	.37	3	2	-.12	.28
Eta/Beta			.12	.09*			.09	.08*			.22	.20*
R Square				.149				.071				.297

cont...

Table 6.4 Unadjusted and adjusted deviations for current family size within couples labor force status and by gender role egalitarianism.

Variable	BOTH DO NOT WORK (mean=.45) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=.04) N	%	Unadj	Adj.**
SHARCOOK								
1. Always you	46	32	.05	-.09	910	27	.10	.02
2. Mostly you	68	48	.04	.07	1821	54	.04	.02
3. Equally	25	17	-.08	.06	521	15	-.20	-.05
4. Mostly partner	4	3	-.70	-.38	118	4	-.51	-.22
Eta/Beta			.07	.06			.11	.04
HOUSWORK								
1. Always you	44	31	.23	-.00	719	21	.11	-.12
2. Mostly you	65	45	-.06	-.13	1707	51	.05	-.00
3. Equally	34	24	-.19	.24	894	26	-.15	.10
4. Mostly partner	--	--	--	--	50	1	-.50	-.12
Eta/Beta			.09	.08			.09	.06*
CHLDCARE								
1. Always you	44	31	.79	1.19	629	19	.38	.28
2. Mostly you	43	30	.07	-.01	1401	42	.23	.13
3. Equally	55	38	-.71	-.95	1323	39	-.42	-.27
4. Mostly partner	1	.6	.94	.39	17	.5	-.12	-.08
Eta/Beta			.34	.49*			.28	.18*

cont...

Variable	BOTH DO NOT WORK (mean=.45) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=.04) N	%	Unadj	Adj.**
CHLDCLOTHES								
1. Always you	45	31	-.00	-.68	1084	32	.24	.10
2. Mostly you	45	31	.57	.78	1133	34	.21	.18
3. Equally	52	36	-.53	-.12	1135	34	-.45	-.28
4. Mostly partner	2	1	1.35	.99	18	.5	.39	.35
Eta/Beta			.26	.33*			.26	.16*
SCHLWORK								
1. Always you	25	17	.22	-.19	432	13	.32	.06
2. Mostly you	25	17	.06	-.56	734	22	.19	.01
3. Equally	88	61	-.05	.25	2062	61	-.15	-.03
4. Mostly partner	6	4	-.48	-.57	141	4	.30	.28
Eta/Beta			.08	.18			.16	.05*
DECISION								
1. Mainly women	16	11	1.42	1.36	313	9	.15	.12
2. Equally shared	105	74	-.21	-.21	2672	79	-.06	-.05
3. Mostly partner	16	11	-.02	-.01	320	9	.27	.19
4. Always partner	5	4	-.02	-.00	65	2	.51	.41
Eta/Beta			.28	.27*			.11	.08*
R Square				.293				.145

* The effect of these variables are significant at least .10 level.
** Adjustments are made for other independent variables and couples labor force status.

find that, in general, the one who works contributes relatively less at home. More specifically, activities such as cooking, housework, taking care of children or shopping for children's clothes, albeit least likely to be enjoyed by men, are participated in more often by men (either equally or alone) if the wife is working. But still there is a substantial hiatus in husband/wife participation in such activities. On the other hand, couples participate equally in supervision of children's school work and financial decision-making. There is also some evidence indicating that women tend to make the most financial decisions by themselves when they alone work outside the home. This could, to some extend, be due to the possibility that women in these categories have a better education than their partners.

When we look into another situation where either both spouses work or don't work, the difference in participation seems to be larger for SHARCOOK, HOUSWORK, and CHLDCARE. Evidently, the percentage of women taking part in activities such as cooking, house work and child care tends to increase when both spouses are not in the labor force. Concomitant is the decrease in equal/husband's participation in such activities.

Overall, husbands' participation in household activities is path-breaking, particularly when their wives are working. Yet, their contributions are not significant enough to reduce the 'double burden' confronted by working

women. In general, these findings are similar to those reported by Bergmann (1986). She contradicts the economists' view (for e.g. Becker, 1981) that the husband's time is so well paid for in the market place that it is too valuable to be devoted to housework and that there would be a financical loss if the family moved in an egalitarian direction. She complains that economists do not explain the husband's low contributions to family care services in those situations where the wife's total work time is greater than the husband's. According to her, since men are not responding to the increased participation of women in the labor force by substantially increasing their participation at home, a greater change may be the 'industrialization of household labor,' i.e. the purchase of household services that are traditionally performed by the wife.

Now, how do the unequal contributions of husband and wife in household activities translate into fertility behaviour? Table 6.4 shows that the average number of children tends to be higher in households where only the husband works (.33) or both spouses don't work (.45), while it tends to be lower in households where both spouses work(-.20) or only the wife works(-.05). In general, couples demonstrating role egalitarianism are likely to have less children irrespective of their labor force status. There are, however, a few exceptions to this generalization. For example, equal sharing of household chores by husband and wife results in larger family size for some of the

variables, by holding other factors constant. This is true particularly in households where both spouses are not in labor force and share equally in activities such as cooking, housework, and supervision of children's school work. It is also true, to some extent, in households where the husband alone works but participates equally in housework.

When we compare households in which either the husband or the wife works, it is interesting to note that all the variables exert significant influence on current family size for former group (husband only work), while only three variables exert significant influence for the latter group (wife only work). However, caution should be taken in assessing the level of significance of individual variables, since some of these are a manifestation of smaller sample size. Particularly, the larger deviation resulting from the 'mostly partner' category seems merely a statistical artifact. Therefore, we need to look into categories of the corresponding variables even if they are not statistically significant. In doing this, we will focus on categories with twenty or more cases.

It is not readily apparent from table 6.4, whether or not one of the spouses' being in the labor force makes any difference in terms of their decisions about family size. Nevertheless, the beta values indicate that the variables used in the analysis are relatively more important in explaining fertility differentials in households where the wife alone works. Surprisingly, in such households only on

three occassions (SHARCOOK, HOUSWORK, and CCLOTHES) is the average number of children lower if these duties are performed by women. A similar situation emerges with three variables (SHARCOOK, HOUSWORK, and CHLDCARE) in households where the husband alone works and the duties are performed by partners, but the sample size is not large enough to attach any confidence to this finding. It is also interesting to note that the average number of children is lower in households where the husband alone works and the financial decisions are made mainly by women. With these few exceptions, couples in segregated role relationships, in general, have more children.

Comparison of households in which both spouses either work or don't work reveals that performance by women of traditional duties corresponding to at least one category (always you/mostly you) on each of the five variables, results in smaller family size if both spouses are not in the labor force. On the other hand, if both spouses are in labor force, only two variables (HOUSWORK and SCHLWORK) produce similar results, but the effects are much weaker. Note also, if neither spouse is in the labor force and the husband/partner does most of the cooking or housework the couple is likely to have a smaller family. Adjustments for duration marriage did not change these findings and are therefore not discussed.

In sum, multivariate analysis of gender role egalitarianism adds little support to the notion that

greater workplace equity brings equal participation at home and that the one who contributes less by employment contributes more at home. Yet, there is a substantial hiatus between husband's and wife's participation at home. Although husbands increase their participation at home when the wife alone works, their participation is still not large enough to reduce the 'double burden' faced by working women. In general, with few exceptions, couples in joint role relationships are likely to have smaller family size while the reverse is true for couples in segregated role relationships. The analysis also suggests that in households where either only the wife works or both spouses are unemployed, couples may have smaller family size. Since most of these women play the traditional role as well, having a large family might increase their burden.

Table 6.5 presents the relationship between value of children and fertility by current labor force status of women. The table reveals no systematic pattern of relationship between the value of children and fertility, except for the two variables of GOAL and HAPPINESS. Also, most of the variables have a significant influence on fertility for women in the labor force. The average number of children is higher for women not in the labor force (.35) than for those in the labor force(-.18).

First, from an examination of the subjective cost of children, it is clear that the variable opportunity cost, the only variable significant in bivariate analysis, is

Table 6.5 Unadjusted and adjusted deviations for current family size (net age) within wife's labor force participation by value of children

Variable	IN LABOR FORCE (mean=-.18) N	Uadj.	Adj.	NOT IN LABOR FORCE (mean=.35) N	Unadj.	Adj.	ALL LEVELS COMB. (mean=.05) N	Unadj.	Adj.**
DISTANCE									
1. S. Disagree	573	.10	.09	478	-.03	-.03	1051	.04	.03
2. Disagree	938	-.06	-.06	708	.02	.02	1645	-.03	-.03
3. Agree	287	.04	.06	243	.01	.03	530	.03	.04
4. S. Agree	30	-.30	-.32	23	-.06	-.13	53	-.20	-.23
Eta/Beta		.07	.07*		.02	.02		.04	.03
BURDEN									
1. S. Disagree	30	-.30	-.37	29	.11	.13	59	-.07	-.13
2. Disagree	73	-.17	-.20	78	-.34	-.31	150	-.22	-.25
3. Agree	696	.01	.04	529	.02	.02	1225	.01	.02
4. S. Agree	1029	.01	.00	815	.02	.02	1844	.01	.01
Eta/Beta		.05	.06*		.06	.06		.04	.05*
OPCOST									
1. Not at all	274	.05	.04	168	.03	.04	441	.01	.05
2. Not very much	453	-.04	-.04	305	-.14	-.11	758	-.10	-.07
3. Fair amount	705	-.01	-.02	555	.07	.05	1260	.02	.01
4. A lot	395	.03	.04	424	.00	.00	819	.06	.02
Eta/Beta		.03	.04		.06	.05		.05	.03

cont...

Variable	IN LABOR FORCE (mean=-.18) N	Uadj.	Adj.	NOT IN LABOR FORCE (mean=.35) N	Unadj.	Adj.	ALL LEVELS COMB. (mean=.05) N	Unadj.	Adj.**
GOAL									
1. S. Disagree	119	-.52	-.33	60	-.43	-.30	179	-.55	-.31
2. Disagree	413	-.13	-.04	269	-.15	-.12	682	-.16	-.07
3. Agree	715	.08	.07	587	.04	.03	1301	.06	.05
4. S. Agree	581	.10	.01	535	.09	.06	1116	.11	.03
Eta/Beta		.15	.08*		.10	.07		.14	.07*
AFFECTION									
1. S. Disagree	34	-.55	-.45	80	-.33	-.27	219	-.51	-.40
2. Disagree	249	-.15	-.04	171	-.05	.09	420	-.12	.01
3. Agree	827	.01	.01	632	.03	.04	1458	.01	.02
4. S. Agree	718	.06	.03	631	.00	-.05	1350	.06	-.01
Eta/Beta		.11	.06		.06	.05		.09	.05*
HAPPYIESS									
1. Not at all impt	139	-.55	-.45	80	-.33	-.27	219	-.51	-.40
2. Not very impt	351	-.25	-.22	211	-.30	-.27	563	-.31	-.24
3. Important	551	.01	.00	450	-.05	-.05	1001	-.01	-.02
4. Very impt	786	.20	.18	710	.16	.14	1496	.20	.16
Eta/Beta		.20	.17*		.14	.12*		.18	.15*
R Square			.061			.033			.086

* The effect of these variables are significant at least at .10 level.
** Adjustmests are made for other variabless and wife's labor force participation.

negligible, while the other two variables are significant for women in the labor force. Respondents agreeing that children mean heavy responsibility (BURDEN) are likely to have more children. Conversely, those disagreeing with such a statement are likely to have fewer children. A small number of women not in labor force disagree with the notion of children as burden. Women in this group may be housewives whose opportunity costs are low and as a result do not see additional children as an increased burden. On the other hand, respondents who agree that having children distances spouses, have a lower mean number of children, paricularly in the case of women in the labour force. Apparently, this is true even among those disagreeing with this statement.

With regard to the subjective benefit of children, the variables show the expected relationship to fertility. The majority of the respondents' particularly women not in the labor force, agree that having a child provides goals, affection, and happiness in life. These respondents have a higher mean number of children than their counterparts who disagree with the belief that such benefits result from having children. In general, these variables are relatively more important in explaining variation in fertility than variables measuring the subjective cost of children. The analysis, however, reveals that although respondents associate burden/cost with having children, they still have more children. This fact leads us to believe that women may have children not merely on the basis of cost-benefit

considerations, but on the basis of other personal motives not captured by variables in the analysis.

In sum, the multivariate analysis of the value of children and fertility shows that the variables used in the analysis are better predictors of fertility differentials for women in the labor force than for women not in the labor force, as demonstrated by the explained variance. Further, the variables measuring the subjective benefit of children are more consistent with our expectations. That is, women who feel that having a child provides, goals, affection, and happiness are likely to have more children. On the other hand, variables measuring the subjective cost of children do not show any systematic pattern in family size. Respondents agreeing that children are a heavy responsibility have more children, while the respondents disagreeing or strongly agreeing that children distance spouses have a smaller number of children. When we look into all the levels combined, we see that although a greater percentage of respondents feel that having a child means heavy responsibility and interferes with their work opportunities outside the home, they still have more children. This appears to be true even after adjustment for duration of marriage. This situation could to some extent be due to the fact that, in a country like Canada, where use of contraceptives is universal, women might, in a conscious effort to reach a desired family size, hold positive rather than negative opinions about having children. However, the

response to the question of whether or not having a child distances spouses tends to support the conclusion of previous studies that those who strongly agree with this statement are likely to have fewer children, particularly in developed nations. In other words, couples do make hedonic calculus and do choose to have fewer children.

6.4 Biological Determinants and Fertility

With greater emphasis on the social, economic and, to some extent, psychological variables in studying the determinants of fertility, biological variables receive little attention unless they enter into the theoretical model as explanatory or conditioning variables. Biological factors, however, mediate the effects of basic determinants of fertility. Thus, it is necessary to recognize the role of these intermediate variables. Davis and Blake (1956), in a frequently cited article, provide a taxonomy of intermediate variables mediating between fertility and explanatory variables. Their framework identifies three categories of variables necessary for successful human reproduction: 1) variables which define the probability of sexual intercourse, such as age at marriage, 2) variables which define the probability of a conception resulting from sexual intercourse, such as the use of contraception; and 3) variables which define the probability of a conception resulting in a live birth, such as spontaneous or induced abortion. Bongaarts (1978, 1982) presents an analytical tool

to quantify the relationships between the intermediate variables and the level of fertility. His quantitative framework uses aggregate data, and his analysis indicates that variations in four factors--marriage, conception, lactation, and induced abortion--are the proximate causes of fertility differences among populations. Researchers have used these proximate determinants in fertility analysis; in fact, extensive use of this framework can be seen in the World Fertility Survey reports.

The Canadian Fertility Survey data do not allow us to compute these indices, therefore, other measures will be used to capture the biological aspect in this analysis. More specifically, three variables--contraceptive use between pregnancies, birth intervals and duration of marriage--are used for this purpose.

While the conceptualization of the last two variables is straightforward, the first variable, contraceptive use between pregnancies, requires some explanation. This variable is constructed to assess whether or not couples are able to control their pregnancies when they wish with the use of contraceptives. For each pregnancy, the extent of the respondent's control over the particular outcome is determined. In a controlled situation, a woman uses contraceptives regularly but stops at a particular time to become pregnant, or a woman may not have used any contraceptives but wants to become pregnant at that particular time--this is particularly true for women

recently married. In an uncontrolled situation, a woman may not have used any contraceptives but would have preferred to become pregnant at some other time or never to have a child. Once all the pregnancies are classified in this way (controlled=1, uncontrolled=0), they are summed up to determine the overall control of fertility for each respondent. Then these values are divided by the number of pregnancies for each respondent, in order to assess the degree of control exercised by respondents during pregnancies. Cases where the respondents report no pregnancies and continue to use contraceptives are classified under the controlled group. On the other hand, if the respondents report no pregnancies and neither the respondent nor her partner uses contraceptives, they are assumed to be sterile and are excluded from the analysis.

Variables such as gender role egalitarianism, value of children and wife's education are also used in the analysis. Previous studies have shown that gender role egalitarianism is related to fertility control (for e.g. Scanzoni, 1976). Other studies also report a relationship between value of children and fertility (for e.g. Turner and Simmons, 1977). In the next chapter, we will examine how these two variables influence fertility through proximate determinants. We are already familiar with the variables used to measure these two constructs (gender role egalitarianism and value of children). But the nature of measurement of these constructs is modified for this analysis.

The variable gender role egalitarianism is a composite index. First, the categories of each variable are dichotomised into couples in egalitarian (1) versus segregated (0) role relationships. Then these values are summed across all six variables. Resulting higher score means greater role egalitarianism. Similar computations are made separately for subjective cost and benefit of children. Then the scores of subjective benefit are substracted from the scores of subjective cost to obtain the variable cost-benefit (see Appendix A for details).

6.4.1 Bivariate Analysis of Biological Factors

Table 6.6 presents Pearson correlation coefficients for biological and other variables considered in the analysis. The coefficients are not large enough to cause any multicollinearity problems. All the variables are significantly related to current and expected family size.

The biological variables, such as degree of contraceptive use and first birth interval, are negatively related to fertility, while the duration of marriage is positively related. The association of these variables seem to be much stronger for current than for expected family size. It is evident from table 6.6 that respondents planning their pregnancies through the use of contraceptives and those with a longer first birth interval are likely to have smaller current and expected family sizes.

Table 6.6 Pearson correlation coefficients for biological and other independent variables.

	AFERT	EXFERT	COSTBENFIT	GRE	FPLAN	INTERVAL	WEDUC	DURMAR
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.1256 (3674) P= .000	-.3024 (3674) P= .000	-.1369 (3383) P= .000	-.4226 (3203) P= .000	-.2532 (3674) P= .000	.1246 (3397) P= .000
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.1590 (3659) P= .000	-.1903 (3659) P= .000	-.0914 (3375) P= .000	-.2693 (3192) P= .000	-.1617 (3658) P= .000	.0727 (3384) P= .000
COSTBENFIT	-.1256 (3674) P= .000	-.1590 (3659) P= .000	1.0000 (3680) P= .	-.0103 (3680) P= .267	-.1037 (3388) P= .000	.0215 (3209) P= .112	.1812 (3679) P= .000	.0531 (3402) P= .001
GRE	-.3024 (3674) P= .000	-.1903 (3659) P= .000	-.0103 (3680) P= .267	1.0000 (3681) P= .	.1421 (3389) P= .000	.1514 (3209) P= .000	.1657 (3680) P= .000	-.3560 (3403) P= .000
FPLAN	-.1369 (3383) P= .000	-.0914 (3375) P= .000	-.1037 (3388) P= .000	.1421 (3389) P= .000	1.0000 (3389) P= .	.1984 (3021) P= .000	.1067 (3388) P= .000	-.1495 (3134) P= .000
INTERVAL	-.4226 (3203) P= .000	-.2693 (3192) P= .000	.0215 (3209) P= .112	.1514 (3209) P= .000	.1984 (3021) P= .000	1.0000 (3209) P= .	.2627 (3208) P= .000	-.0370 (3209) P= .018
WEDUC	-.2532 (3674) P= .000	-.1617 (3658) P= .000	.1812 (3679) P= .000	.1657 (3680) P= .000	.1067 (3388) P= .000	.2627 (3208) P= .000	1.0000 (3680) P= .	-.2770 (3402) P= .000
DURMAR	.1246 (3397) P= .000	.0727 (3384) P= .000	.0531 (3402) P= .001	-.3560 (3403) P= .000	-.1495 (3134) P= .000	-.0370 (3209) P= .018	-.2770 (3402) P= .000	1.0000 (3403) P= .

The sociopsychological variables, gender role egalitarianism and cost-benefit, show the expected relationship with fertility. That is, fertility decreases if the couples feel that cost outweighs the benefit of having children and if they share equally various home activities. Meanwhile, if we look into the association of these two factors with biological variables, we see that gender role egalitarianism is much more strongly correlated than value of children. As the egalitarianism increases couples are more likely to plan their pregnancies and postpone their first birth. Evidently, couples married in recent years are appear to maintain greater egalitarianism at home; these couples may also belong to younger cohorts. On the other hand, respondents who feel that cost outweighs benefit seldom plan their pregnancies. This association is unexpected. It is also interesting to note that respondents married for a longer period of time feel that children incur more costs than they provide benefits. Note also, there is some indication that egalitarian couples feel the cost of having children is relatively low.

6.4.2 Multivariate Analysis of Biological Factors

Preliminary analysis of the variables discussed earlier indicates that the influence of birth interval on fertility varies by marriage duration. This interaction is found to be highly significant (<.001 level). Therefore, the analysis is done within marriage duration, as shown in table 6.7. For

the first two categories of duration of marriage, all the variables in the model exert significant influence on current family size, while for the remaining two categories, only the biological variables appear to be significant. This difference is reflected by the higher explained variance for the first two categories of marriage duration.

When we look into respondents' planning of pregnancies (FPLAN), we note that the average family size is lower for the two extreme categories, although the Pearson correlation coefficients indicated a significant inverse relationship of FPLAN with fertility. This non-linear relationship seems to be consistent across all categories of duration of marriage. Note, however, that while the percentage of respondents making some plans about their pregnancies increases with duration of marriage, the percentage of respondents making perfect plans about their pregnancies tends to decrease. In terms of effects, although one could understand a smaller family size for respondents planning all pregnancies with the use of contraceptives, it is not readily apparent why similar results emerge for respondents not planning any of their pregnancies. However, closer examination of respondents who did not plan their pregnancies reveals that 1) about 90% of the respondents had fewer than three pregnancies--these pregnancies were not desired by the respondent at that particular time (see the procedure for FPLAN calculation); also, about 40% of the women experienced one or more pregnancy wastage; 2) of the 314 (8%)

Table 6.7 Unadjusted and adjusted deviations(**) for current family size within duration of marriage by other independent variables.

	LE 6 yrs			7-12 yrs			13-19 yrs			20-34 yrs		
Variable	N	Unadj.	Adj.	N	Unadj.	Adj.	N	Unadj.	Adj.	N	Unadj.	Adj.
FPLAN												
1. No plan	78	-.08	-.15	54	-.64	-.59	53	-.41	-.46	67	-.54	-.60
2. Some plan	140	.73	.40	251	.43	.29	311	.37	.29	406	.43	.30
3. Perfect plan	465	-.21	-.09	454	-.16	-.09	443	-.21	-.15	291	-.47	-.28
Eta/Beta		.43	.23*		.36	.27*		.30	.24*		.31	.22*
INTERVAL												
1. LE 1 years	261	.58	.40	259	.43	.36	358	.29	.21	468	.40	.32
2. 1-2 years	145	.06	.07	137	.17	.13	134	-.12	-.11	120	-.26	-.24
3. 2-4 years	182	-.45	-.33	193	-.10	-.09	171	-.05	.00	96	-.57	-.46
4. 4 + years	95	-.81	-.57	170	-.68	-.55	144	-.53	-.41	79	-1.26	-.98
Eta/Beta		.60	.42*		.46	.37*		.30	.23*		.38	.30*
COST-BENEFIT												
1. Low	432	.05	.03	471	.05	.03	470	-.01	.00	442	.10	.05
2. Medium	183	.03	.01	198	-.03	-.01	210	.06	.04	193	-.14	-.06
3. High	68	-.37	-.21	90	-.20	-.12	127	-.04	-.07	129	-.13	-.08
Eta/Beta		.14	.08*		.09	.05*		.03	.04		.08	.04
GRE												
1. No egalitarian	14	.51	.19	36	-.01	-.07	54	.12	.07	101	.35	.23
2. Low egalitarian	205	.32	.14	388	.13	.07	478	.04	.04	437	-.02	-.04
3. Medium egali.	322	-.01	-.01	265	-.10	-.04	220	-.10	-.09	196	-.14	-.02
4. High egali.	143	-.48	-.19	70	-.34	-.20	55	-.08	-.01	30	-.05	-.08
Eta/Beta		.33	.14*		.16	.09*		.07	.06		.10	.06
R Square			.478			.313			.160			.223

* The effect of these variables are significant at least at .10 level.
** Adjusted for other independent variables and wife's education.

respondents belonging to this category about 195 (63%) are currently using contraceptives, 69 (22%) are sterilized and 44 (14%) of them are not using any contraceptives for reasons such as 'want to have baby' or 'new baby'; and 3) about 206 (67%) respondents had their first birth within the first year of marriage, leading us to speculate that these women, after unplanned pregnancies, started to use contraceptives in a rigorous fashion.

The first birth interval has significant inverse relationship with current family size across all categories of marital duration. Its effect is comparatively stronger than planning of pregnancies (FPLAN), as shown by the beta coefficients. Even after the adjustment for other variables the range remains more than .90 in three categories of marital duration. Most respondents had their first birth within the first year of marriage, especially women married for 20 or more years.

The sociopsychological variables value of children (COST-BENEFIT) and gender role egalitarianism have significant influence on fertility for the first two categories of marital duration. With few exceptions, these two variables are inversely related to fertility. Not surprisingly, their effects are much weaker in relation to biological variables. Most of the respondents feel that the subjective cost of children is relatively lower than the subjective benefit. Notice, however, that the percentage of respondents feeling that the cost outweighs the benefit,

tends to increase with marital duration. This is not surprising, since women married for a longer period of time are in a better position than others to evaluate children on the basis of their experience.

With regard to gender role egalitarianism, the percentage of couples non-egalitarian or low egalitarian couples tends to increase with duration of marriage. Conversely, the percentage of couples with medium and higher egalitarianism appears to decline with marriage duration. As shown by the beta values, gender role egalitarianism is relatively more important than value of children, particularly among recently married women.

Table 6.7 reveals that the four variables used in the analysis, along with wife's education, explain a significant portion of variance in current family size for the first two categories of marital duration. Among these, biological variables explain most of the variation in fertility. We have not examined how much of the variations in the biological variables are explained by sociopsychological variables; this will be the focus of the next chapter.

To conclude, the findings from this chapter can be summarized as follows:

1.

Sociopsychological variables, such as gender role egalitarianism and value of children, offer little explanation for variation in fertility. With regard to gender role egalitarianism, there is some evidence

work-place equity for couples brings equal participation at home, and that the one who contributes less by employment contributes more at home. Husbands increase their participation at home when wives work outside, but their participation is nevertheless insufficient to reduce the 'double burden' faced by working women. With few exceptions, couples in joint-role relationships are likely to have smaller family size than couples in segregated role relationships.

2.

With regard to value of children, most respondents are of the opinion that having a child provides greater benefits and that the accompanying costs are relatively fewer. In a perfect contraceptive society like Canada's this may not be surprising. Individuals make a conscious effort to control their family size and achieve their desired family size. However, in situations where costs are perceived as outweighing the benefits of having children, individuals prefer to have smaller family size.

3.

Higher gender role egalitarianism is associated with greater use of contraceptives in planning pregnancies and with postponement of the first birth. Similar associations are not observed for the value of children. This discrepancy suggests that couples' decisions to have children may be influenced not merely by cost-benefit considerations but by narcisstic motives as well. However,

among couples married for a shorter duration, strictly rational cost-benefit considerations seem to be significantly related to current family size.

Chapter 7

A CAUSAL MODEL FOR THE DETERMINANTS OF FERTILITY

The emphasis thus far has been on establishing the causal connection between structural, economic, sociopsychological, and biological variables and fertility. Although much could be learned from these experimentations. a more complete understanding of fertility phenomena requires us to address various determinants together with their interrelationships. For example, one might be able to explain a significant portion of variance in fertility by means of a variable like education, but if one does not know what education really means in this context or how it influences fertility through other variables, one's gain in understanding may be limited. The objective of this chapter, therefore, is to develop a causal model to study the determinants of fertility.

As mentioned earlier, despite the amount of work that has gone into developing an adequate theory of fertility, there is little consensus on a single dominant theory. Nevertheless, the information obtained from various frameworks will be used to develop an integrated causal model for the present study. In particular, the framework developed Bagozzi and Van Loo (1980), will, with some modification, enable us to identify the most important elements involved in the fertility decision-making process.

7.1 Theoretical Framework

The theory of fertility developed by Bagozzi and Van Loo (1978:303) views fertility decisions as an outcome of social exchanges. The nature of these exchanges is represented by the degree of egalitarianism and social influence between husband and wife. Social and economic variables are then viewed as contraints on the husband's and wife's attitudes and their social exchanges. We will briefly examine how these components are likely to influence fertility.

7.1.1 Socioeconomic Determinants

Economists view fertility as an outcome of family decision processes whereby households select a family size that maximizes satisfaction, given the relative prices of commodities, tastes, and total income. Economic variables such as, family income, opportunity cost of wife etc. are assumed to influence fertility through social psychological processes. That is, attitudes (tastes) toward fertility arrived at by couples through sociopsychological processes are functions of subjective rewards and costs of children, which are in turn are constrained by income and the prices of goods and services. These subjective rewards and costs are also influenced by the power, conflict, and social influence flowing between husband and wife. These ideas are consistent with Easterlin's (1969) and Leibenstein's (1974) suggestions.

Social norms and socioeconomic status are also important social determinants of fertility. Social norms, with respect to fertility, specify ideal family size, child bearing practices and marital sex role behaviour. Norms are assumed to influence fertility through social exchanges between husband and wife. In other words, they define the rights and responsibilities of the spouses with regard to decision making, career choice, and overall sex-role egalitarianism. Some norms are learned prior to marriage and are brought to the relationship as constraints on give-and-take.

The socioeconomic status of a family indirectly influences fertility. It leads them to adopt a family size and pattern of consumption consistent with their rank in the society. For example, there is more social pressure on families with a high socioeconomic status to provide extensive child services, engage in dual husband-wife careers, and spend more on recreation and travel than there is on families of lower socio-economic status. Taking all this into consideration, one would expect a negative influence of SES on fertility. In addition, the family's socioeconomic status is likely to influence its sex-role relationships (Rainwater, 1960, 1965).

7.1.2 Social Psychological Processes

Sociopsychological processes are an essential component of Bagozzi and Van Loo's theory of fertility, which assumes

that fertility decisions are the outcome of give-and-take and sharing between the husband and wife. Marital exchanges are proposed to be a function of three broad determinants: a) the social influence accompanying these exchanges, b) the characteristics of the husband and wife, and c) the socioeconomic factors constraining these exchanges. Social influence includes actual transfer of messages between spouses in order to express their needs and desires. In order to satisfy individual needs and achieve mutual satisfaction the husband and wife exchange rewards and punishments associated with their physical, psychic and social assets. Empirical researchers operationalize social influence through the power, conflicts and role egalitarianism existing between husband and wife. It is assumed that the more balanced the power, the less the conflict, and the greater the egalitarianism, the greater the probability that couples will use effective contraceptives to achieve smaller family size.

The theory hypothesizes that the characteristics of husband and wife, such as attitudes of family members to depend on and to influence the social exchanges occurring between the spouses. The attitudes of family members are thought to exhibit three conceptually distinct characteristics: a) the affective component expresses the emotional content of attitudes, such as the feelings of family members toward the idea of having children, providing child care and the like. The more positive the affect,

feelings, and desire to have children the greater the probability the family will have them; b) the behavioral component reflects the actions and choices family members make, or intend to make, in order to have children. For example, while the opening of a bank account for the education of a child expresses the positive attitude towards children, the decisions of spouses to pursue independent careers reflect their negative attitude towards having children; and, finally, c) the cognitive component captures the beliefs of family members with regard to the consequences of having children. For example, some spouses may associate a greater financial and psychological burden with having children, while others may associate greater affection, companionship and satisfaction.

In sum, fertility is hypothesized to be a direct function of social psychological process within the family and an indirect function of socioeconomic constraints on family size.

7.2 The Causal Model

The causal model for the present study incorporates proximate variables, in addition to socioeconomic and psychological variables. Although most of the frameworks suggest that the last two components influence fertility through proximate or biological variables, these components have not been explicitly modeled. Thus, the model is in a way a variant of Bagozzi and Van Loo's model. The present

model hypothesizes that fertility is a direct function of biological variables and an indirect function of sociopsychological and socioeconomic variables.

The discussion is organized as follows. First, the variables are selected to measure the underlying concepts. Second, the hypotheses to be tested are presented. Third, the method of analysis is discussed. Following this, the findings are presented. Included are findings from models tested for ethnicity, religion and region.

7.2.1 Selection of Variables

The variables selected to measure a given concept must fulfill the following conditions: 1) the level of measurement should be at least an ordinal, and 2) the number of missing cases should not be large. The other obvious requisite, of course, is that the indicators of a given concept demonstrate a reasonable association among themselves.

These criteria and the variables availability in the Canadian Fertility Survey lead to the formulation of concepts necessary for the causal model. The rationale for including the various indicators to measure an underlying concept should be evident from the discussion in chapters 4 to 6. Therefore, in this chapter we will provide only a brief account of selection of variables.

7.2.1.1 Socioeconomic Determinants

The latent concepts classified under socioeconomic determinants include educational status, financial status, commitment to work and residence.

Educational status includes both husband's and wife's education. It has different consequences for men and women with regard to the fertility process and the roles they play in that process (Cain and Weininger, 1975; Cochrane, 1979; Janowitz, 1976; United Nations, 1983). Economists treat husband's education as 'permanent income' and wife's education as a proxy for 'opportunity cost'. Education is used here to assess the general status of the family, with the assumption that it tends to widen horizons by influencing the attitudes and exchange behaviours of the household members.

Economic status of the couples has been constructed by means of multiple indicators. Current income, it is argued, is not necessarily the appropriate income measure for household decisions having long-term consequences (Becker, 1965; Easterlin, 1969; Freedman, 1963). In its place, the authors suggest the use of 'permanent/potential income' (couples' expectations of income over their lifetime) and 'relative income' (the financial situation of a couple compared to that of ther couples). For the present study, the economic status is measured by indicators such as lifetime savings, financial planning, financial success and relative economic status.

The notion of commitment is measured by the number of work interruptions experienced by women in the labor force. The rationale for using such a measure is that women who work regularly are liable to develop greater commitment. Also, career jobs offer alternative interests and achievements that constrain domesticity and motherhood. Particularly for women who were in the labor force prior to marriage or prior to having their first child, such an interruption cost may be quite high. Thus, women with greater commitment to work are likely to have fewer children (Pinelli, 1971; Kupinsky, 1977).

Residential status of the respondent in youth is considered for this study because it encompasses a wide range of normative, sociopsychological and economic factors associated with the lifestyles of the habitants. The assumption here is that the societal and familial factors influencing a child's values and norms may have some bearing on his or her decision-making at later stages. In other words, urban-rural fertility differences in childhood residence can approximate family difference in childhood SES. And these differences are likely to reflect differential experiences in educational quality, exposure to relatively industrialized labor markets, and in general, exposure to relatively wealthier lifestyles. The degree of traditionalism, familism and life style associated with a given habitat might help to explain fertility differentials.

7.2.1.2 Social Psychological Processes

Gender role egalitarianism and value of children are the concepts used in the social psychological dimension. The former tends to capture the social influence between husband and wife. The assumption is that the husband and wife assume a set of roles within the marital relationship in order to meet their individual and joint sex role preferences. Such relationship will create greater-or-lesser egalitarian role statuses in their attitudes and behaviour with regard to sharing of household duties, childcare, decision-making etc. The more egalitarian the roles of husband and wife, the better their communication, and the more effective their limiting of family size (Back and Hass, 1973; ESCAP, 1974; Polgar and Rothstein, 1970; Rainwater, 1965; Scanzoni, 1972, 1976; Stokes and Dudley, 1972).

The value of children, measured by subjective cost and benefit of children, reflects the respondent's attitude toward having children. This in turn depends upon the social exchange between husband and wife. The premise here is that the greater the couple's desire for the rewards associated with a more egalitarian marriage, the lesser their desire for the benefits resulting from additional children.

7.2.1.3 Proximate determinants

The three biological variables considered for the causal model include fertility planning, birth interval and marriage duration. The variable fertility planning refers to the use of contraceptives in planning various pregnancies. The reason for using this measure over the current use of contraception is that the latter is irrevelant in causal modeling. It is possible to obtain a positive correlation between current or ever use of contraception and fertility because the decision to use contraceptives is based in part on the number of living children. Thus, not only is the association in the wrong direction, but the flow of causality is bidirectional (between fertility and contraception) rather than unidirectional (from contraception to fertility). The measure considered for the present study may alleviate this problem. The other two measures are direct and correspond to their respective concepts. It is hypothesized that the cumulative fertility of a continously married woman near the end of her reproductive career will be greater according to the following factors: 1) the less frequent her use of contraceptives in planning pregnancies; 2) the longer her period of exposure, as measured by marriage duration; and, 3) the more rapid her early rate of childbearing, as measured by first birth interval.

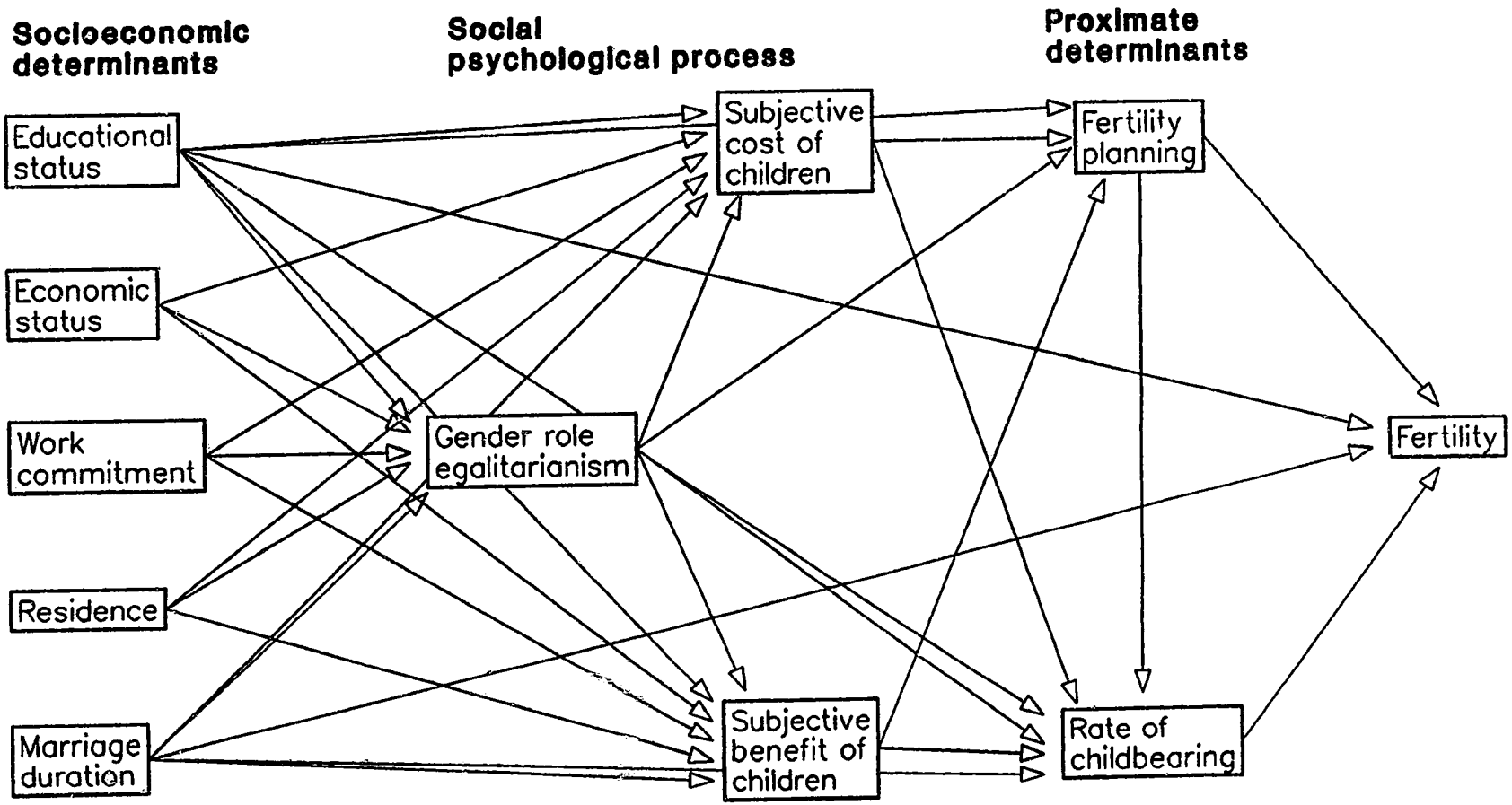
The proposed causal model is given in figure 7.1. Note, the concept of period in union measured by duration of marriage is included under socioeconomic determinants, since it is causally prior to social psychological processes. The Pearson correlation coefficients for the study variables are given in Appendix B.

As shown in figure 7.1, fertility is hypothesized to be a direct function of biological factors and an indirect function of the social psychological processes and socioeconomic conditions of the family. In other words, socioeconomic factors will affect gender role egalitarianism and the subjective cost and benefit of children, both of which, in turn, will influence fertility through biological factors. For simplicity, the model is assumed to be recursive.

7.3 Method of Analysis

A causal model typically consists of a theoretical structure involving the relationships among unobservable, hypothetical constructs referred to as latent variables. Although these latent variables are not directly measurable, they can be evaluated by one or more observable indicator variable. Using a single indicator to measure a given concept, as in path analysis, may introduce considerable measurement error in a causal model. One can overcome such a problem through the use of multiple indicators of each concept. It is the multiplicity of indicators that enables

Fig 7.1
Proposed model for the determinants of fertility



us to differentiate unreliability of measurement from an accurate index of the underlying concept.

The present study uses the linear structural relationship model, or LISREL, developed by Joreskog (1973,1977,1978), and Joreskog and Sorbom (1986). The LISREL computer program is effective in estimating causal models, particularly models involving multiple indicators. This program is not easy to learn or simple to employ; and it is expensive in terms of computer time use. LISREL consists of the structural equation model and the measurement model. The structural equation model describes the theoretical causal relationships among the latent variables through a set of general linear equations. The measurement model describes the measurement of the latent variables by the observable indicator variables and allows evaluation of the reliability of such measures.

The LISREL system overcomes some of the problems involved in employing such techniques as correlation and regression analyses. According to Joreskog (1973), there are three difficulties associated with these techniques: a) if there are measurement errors in the independent variables, these errors will give rise to inconsistent regression estimates; b) if the parameters in the structural equations and the reduced form are not in a one-to-one correspondence, one or more of the parameters of the structural equations may be overidentified or underidentified; and c) since the regression technique is applied to each equation separately,

one does not get an overall test of the entire causal structure. These difficulties are to a certain extent eliminated in LISREL analysis. In addition, the LISREL computer program is extremely flexible in that it can accommodate virtually any type of causal model, as well as efficient over variable sample sizes, and robust over nonnormality. The LISREL model makes allowances for structural errors, measurement errors, correlated errors of measurement, and models with reciprocal causation, as well as confirmatory factor analysis, longituditional analysis, simultaneous analysis in several populations, and covariance-structure analysis. Further, it provides modification indices and partial derivatives that give some clue about the validity of the model structure. Above all, LISREL allows the use of multiple indicators for the estimation of theoretical variables and builds models closer to the real world. It provides the test for how well the hypothesized model is able to reproduce the original variance-covariance matrix of the indicators. The procedure for estimating the parameters for the proposed model (Figure 7.2), along with the definition of the symbols used, is given in Appendix D.

7.4 Findings

The preliminary analysis of the proposed model (fig. 7.1) did not fit the data. The subsequent analyses indicated the need for the following modifications to the model: 1)

creation of two subconcepts of gender role egalitarianism--one dealing with household activities (GRE1) and the other with children (GRE2); and 2) deletion of problematic indicators of a given concept from the analysis. In addition to these changes, measurement errors of certain indicators are allowed to be correlated in the model.

Many nonsignificant paths were removed from the model, and LISREL was reapplied to the data. The final model (figure 7.2) provides the best fit of observed data with the theoretical model (χ^2= 52.30; DF=67; p= .706; GFI= .997; R^2= .797). Table 7.2 presents the indirect and total effects of exogenous and endogenous variables for this model.

7.4.1 Endogenous Variables

Figure 7.3 provides support for the hypothesis that fertility will be a direct function of biological variables and an indirect function of the social psychological processes within the family.

Gender role egalitarianism (GRE1)--dealing with household activities--exerts significant influence on GRE2--dealing with children, fertility planning and rate of childbearing. Couples sharing household activities also appear to share equally the activities surrounding children (.345). Such couples, however, tend to use contraceptives less frequently in planning pregnancies (-.450), and their first birth intervals are likely to be shorter (-.909). This finding does not confirm the egalitarian hypothesis, but the

Fig 7.2
Causal model for the determinants of fertility in Canada, 1984

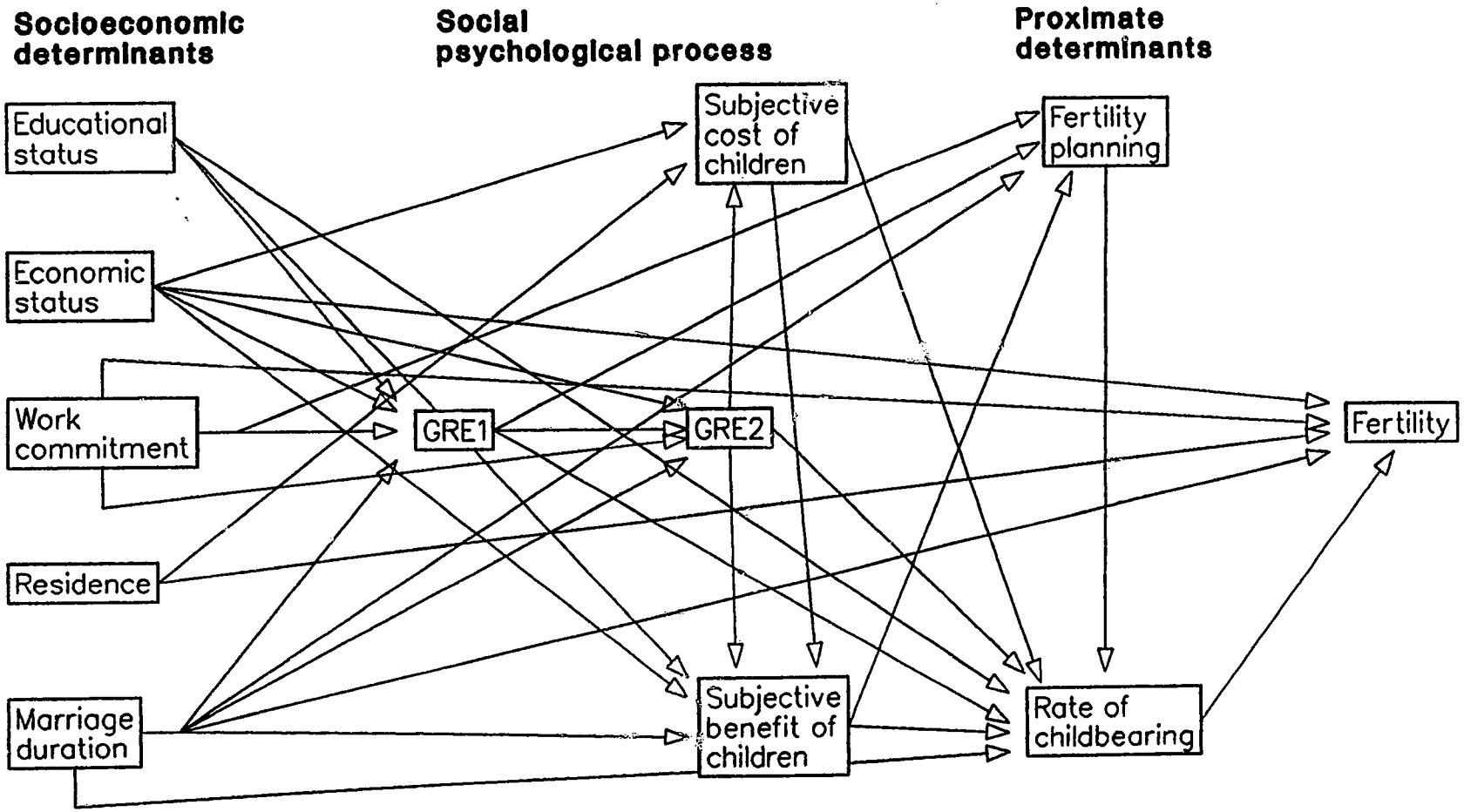


Table 7.1 Indirect and total effects of endogenous and exogenous variables for the model in fig 7.2

VARIABLE	INTERVAL	FPLAN		BENEFIT		COST		GRE2		GRE1	
	TE	IN	TE	IN	TE	IN	TE	IN	TE	IN	TE
FERTILITY	-.162	-.023	-.023	-.291	-.291	-.041	-.041	-.280	-.280	.061	.061
INTERVAL			.144	-.087	1.798	-.800	.252	-.506	1.728	.531	-.378
FPLAN					-.607	.270	.270	.108	.108	.038	-.412
BENEFIT							-.445	.078	-.178	-.061	-.061
COST									-.176		-.061
GRE2											.345

VARIABLE	WEDUC		ECOSTAT		INTERUPT		RESID		DURMAR	
	IN	TE	IN	TE	IN	TE	IN	TE	IN	TE
FERTILITY	-.071	-.071	-.063	-.472	.155	2.154	-.015	-.882	-.006	.028
INTERVAL	-.141	.440	.386	.386	-.961	-.961	.089	.089	-.002	.032
FPLAN	.026	.026	-.133	-.133	.174	-2.582	.095	.095	.019	-.192
BENEFIT	-.003	-.073	.051	.160	.112	.112	-.156	-.156	.008	-.020
COST	-.002	-.002	-.032	-.221	.111	.111		.352	.007	.007
GRE2	.014	.014	.027	.183	-.185	-.630	-.000	-.000	-.005	-.042
GRE1		.040		.081		-.539				-.014

indirect effects do provide some evidence that as gender role egalitarianism increases, couples tend to plan most of their pregnancies (.531) and have longer first birth intervals (.038). In general, egalitarianism with respect to household chores serves to raise the current family size through its influence on other variables in the model (.061).

On the other hand, the gender role egalitarianism (GRE2) measured by activities related to children has significant influence on the subjective cost and benefit of children and on the rate of childbearing. As gender role egalitarianism increases, the subjective cost and benefit of having chil[illegible] decrease while the rate of childbearing increas[illegible] irect effect (table 7.2) of GRE2, however, is t[illegible] benefit of children (.078), and fertility p[illegible] nd to decrease the rate of childbearing ([illegible] to GRE1, GRE2 has significant negative in[illegible] sty (-.280).

[illegible] egard to subjective cost and subjective benefit of children, the former has a significant direct influence on rate of childbearing (1.052) and an indirect influence on fertility planning (.270), while the latter has significant direct influence on both the biological variables. Except for the path from subjective benefit of children to rate of childbearing, all other paths are in the expected direction. For example, as the subjective cost of children increases, the subjective benefit of children decreases (-.445), and

the rate of childbearing increases (1.052). Similarly, the use of contraceptives in fertility planning decreases with the subjective benefit of children (-.607). The standardized coefficients given in table 7.2 show that subjective cost has the strongest influence on the subjective benefit of children (-.533).[1] These two measures also exhibit stronger influence on the rate of childbearing, as shown by their respective standardized coefficients of .206 and .397. In general, both the subjective cost and the subjective benefit of children act indirectly to reduce current family size.

Among the two biological determinants, the rate of childbearing has significant direct influence on fertility and mediates the effect of fertility planning. The effects of these variables are as expected. The longer the first birth interval, the lower the current family size (-.162). Similarly, the higher the use of contraceptives in fertility planning, the longer the first birth interval (.144) and the smaller the current family size (-.023). The model implies, in a way, that the effects of all the endogenous or intermediate variables are transmitted through the rate of childbearing. This relationship is reflected in the magnitude of the standardized coefficient for the path leading from rate of childbearing to fertility (-.438).

In sum, the findings suggests that, while the effects of social psychological variables are mixed, the effects of

---

[1]The reciprocal effects between these two measures did not fit the model. Also, the reverse effect was found to be not statistically significant.

Table 7.2 Standardized coefficients, correlation of etas* and explained variance.

VARIABLE	FERT	INTERVAL	FPLAN	BENEFIT	COST	GRE2	GRE1	WEDUC	ECOSTAT	COMMIT	RESID	DURMAR
FERTILITY		-.438							-.167	.442	-.282	.226
INTERVAL	-.521		.127	.307	.206	.364	-.130	.483				.423
FPLAN	-.174	.115		-.112			-.073			-.256		-.594
BENEFIT	.035	-.003	-.010		-.533	-.256		-.358	.100			.424
COST	-.003	.032	.018	-.547		-.147			-.146		.216	
GRE2	-.280	.204	.291	-.005	-.167		.303		.144	-.223		-.558
GRE1	-.176	.053	.093	-.067	-.074	.474		.229	.085	-.308		-.249
R Square	.471	.232	.253	.474	.091	.488	.164					

* The correlations among the etas are given in the lower diagonal.

biological variables are as predicted. Gender role egalitarianism (GRE1)--operationalized by sharing of household activities--directly reduces the use of contraceptives in fertility planning and the rate of childbearing. Although its indirect effects are just the opposite, the final outcome is an increase in current family size. This is not surprising, since in egalitarian households both partners participate in household chores, thus permitting themselves to have extra familial interests as well as additional children. On the other hand, couples maintaining egalitarianism in activities related to children prefer to have smaller family size by postponing their first birth and planning their pregnancies with the help of effective contraception. But this is not readily apparent in their attitude toward children. Respondents from egalitarian households associate lower cost and benefit with having additional children. This implies, then, that in a country like Canada, where a small family norm is prevalent, individuals make fertility decisions not merely on the basis of cost-benefit considerations but on the basis of other personal motives as well. Or, perhaps the indicators used here are a poor proxy and do not sufficiently capture the realm of value of children. The higher correlation of measurement errors between the two latent concepts of cost and benefit would lend support to such speculations (Table 7.3). Nevertheless, the model supports the hypothesis that social psychological variables influence fertility through

Table 7.3 Disturbance terms, error variances and covariances.

	GRE1	GRE2	COST	BENEFIT	FPLAN	INTERVAL
PSI	.124	.098	.251	.101	4.188	5.542

THETA EPSILON

	ϵ_1	ϵ_2	ϵ_3	ϵ_4	ϵ_5	ϵ_6	ϵ_7	ϵ_8	ϵ_9	ϵ_{10}	ϵ_{11}
SHARCOOK	.379										
HOUSWORK		.091									
CHLDCARE	.021	-.006	.292								
CCLOTHES	.027		.025	.459							
SCHLWORK	-.014	-.012	-.016	.011	.414						
DISTANCE	.024				.025	.254					
GOAL	-.008			.011		.110	.431				
AFFECTIN		.015				.047		.330			
FPLAN				.110	-.079		.087		.125		
INTERVAL			.012							1.011	
FERTILITY		.047		.030	.056		.051				.335

	WEDUC	ECOSTAT	INTERUPT	RESIDENC	DURMAR
TD	3.018	.426	.189	.574	19.967

biological variables. Table 7.2 provides the correlations among the endogenous concepts, which are in the hypothesized directions. The associations of gender role egalitarianism and biological concepts with fertility are noticeably higher than those of value of children.

7.4.2 Exogenous Variables

Figure 7.2 shows that, except for education, all other variables have significant direct influence on fertility. The standardized coefficients (table 7.2) show that commitment to work has strongest influence on fertility (.442), followed by residence (-.282), duration of marriage (.226) and financial status (-.167). The indirect effects (table 7.1) of these variables are much weaker, thereby allowing us to question the hypothesis that socioeconomic determinants influence fertility through social psychological and biological variables. In the following paragraphs we will examine how these variables are linked to the intermediate variables.

Educational status, surprisingly, has significant direct influence only on rate of childbearing (.581), gender role egalitarianism (GRE1: .040) and subjective benefit of children (-.070). These effects are relatively stronger as shown by the standardized coefficients. These effects suggest, then, that the higher the wife's education, the longer the interval between marriage and first birth (.483), the lower the feeling of benefit resulting from having

children (-.358), and the higher the egalitarianism in sharing household duties (.229). However, the indirect effects of education on subjective cost of children (-.002) and rate of chilbearing (-.141) are not in the expected direction. One possible explanation for these findings is that wives with higher education are likely to be married to partners with similar characteristics, that they are likely to maintain egalitarianism at home and therefore, they may associate a lower cost with having children. In addition, after spending a substantial number of years in schooling, thereby postponing their marriage, these women are likely to have children within a short period after the marriage. In essence, the wife's education operates through the intermediate variables to reduce currently family size. But this effect is relatively small.

The economic status[2] of the husband has significant direct influence on all the variables in the model, except for biological ones. The standardized coefficients reveal that economic status has the strongest influence on fertility (-.167), followed by subjective cost (-.146), gender role egalitarianism (GRE2: .144), subjective benefit (.100) and gender role egalitarianism (GRE1: .085). As husbands' income increases, they are more likely to participate equally in activities related to household and children. Also, they associate greater benefit and lesser cost with having children. The indirect effect of economic

---

[2]This is measured by husband's income. Other proposed measures were found not useful.

status on the rate of childbearing is as expected, but the same cannot be said for fertility planning (-.133). This discepancy could be due to the fact that these respondents may desire smaller family size and therefore may not have used any contraceptives. Note, however, that the data on use of contraceptives in fertility planning do not include information on current use. Hence, it is quite possible that these respondents may have adopted effective contraception after achieving their desired family size. In this case, they may decide to have smaller family size.

The degree of commitment to work[3], measured by number of interruptions, has significant direct influence on fertility (.442), GRE1 (-.308), FPLAN (-.256), and GRE2 (-.223), as shown by the standardized coefficients. Women with lesser commitment to work are more likely to engage in traditional duties. These women can be characterized as less educated and as working in unskilled jobs. Their opportunity costs are likely to be relatively low. Consequently, they may interrupt their work more often and develop a greater taste for household activities. With regard to value of children, although there is no direct effect, the indirect effects suggest that women with lower commitment to work associate greater subjective cost as well as greater benefit with having children. While the latter effect might be understandable, the former is unexpected. This lack of consistency can be attributed to the inability of the

---

[3]Higher score means lower commitment to work.

indicators to differentiate between subjective cost and benefit. This further supports the point made earlier about the inadequacy of these indicators in measuring underlying concepts. Finally, women with lower commitment to work are less likely to use contraceptives in planning fertility and have shorter first birth intervals. Although the indirect effect of commitment on fertility planning is positive (.174), it is not large enough to reduce the magnitude of its total effect (-2.582). In general, as the degree of women's commitment to work decreases, the greater the likelihood that they will have larger family size. This effect is further enhanced through its influence on social psycholgical and biological variables.

The residential status of the respondent in youth has significant direct influence on fertility (-.867) and the subjective cost of children (.352). The findings suggest that respondents from urban or larger cities are more likely to associate a greater cost (.352) and a lower benefit (-.156) with having children. They are also more likely to use contraceptives in planning pregnancies (.095) and to postpone their first birth after marriage (.089). For women in urban areas, these variables operate directly, as well as indirectly, in favour of smaller family size.

The period in union, measured by duration of marriage, has significant direct influence on all endogenous variables, except the subjective cost of children. These effects are relatively stronger, as indicated by the

standardized coefficients. Table 7.1 suggests that as the duration of marriage increases the couples are less likely to maintain egalitarianism at home. Obviously, women married for a longer period of time are likely to be from a generation where the activities related to household and children are traditionally performed by women. It is also evident from the table that as the duration of marriage increases the subjective benefit of children decreases (-.020) while the subjective cost of children increases (.007). This fact reflects, in a way, the seemingly bitter opinions held by these women about their interactions with children. With regard to biological variables, the increase in duration of marriage reduces planning of fertility (-.192) and increases the first birth interval (.032). The indirect effect of duration of marriage on these two variables shows a reverse effect. Overall, the duration of marriage acts directly to increase the current family size and indirectly, through other variables, to reduce the current family size.

In sum, all the exogenous variables, except wife's education, have significant direct influence on fertility. The effects of these variables, both direct and indirect, are as hypothesized, except in the case of duration of marriage. Although the final outcomes of these variables are as predicted, it is valuable to identify how these effects are transmitted through intermediate variables. For example, wife's education influences fertility indirectly through

gender role egalitarianism(1), subjective benefit of children and rate of childbearing; the husband's economic status through social psychological variables; the degree of commitment through gender role egalitarianism and subjective benefit of children; the residential status of the respondent mainly through subjective benefit of children; and finally, the duration of marriage influences fertility through all endogenous variables, except for the subjective cost of children.

7.5 Discussion and Conclusion

The causal model developed in this chapter builds upon the theory of fertility developed by Bagozzi and Van Loo (1978) and departs from it slightly with the inclusion of proximate determinants. The model tested here is much more complex than those tested by Bagozzi and Van Loo (1978, 1980). It is based on the assumption that it is not sufficient to examine only the impact of social and economic variables on fertility, although this is the traditional practice of sociologists and demographers. Rather fertility decisions depend upon the social exchange/interaction between husband and wife subject to certain external constraints. The rationale being that different households may respond differently to the same economic and normative constraints depending on the needs and attitudes of the spouses, the degree of social exchange between them, and other aspects of the marital and family relationship. Thus,

in the proposed causal model, it is hypothesized that fertility is a direct function of biological and an indirect function of socioeconomic and psychological factors. In other words, family size outcome depends upon the following factors: 1) the degree of planning of fertility; 2) the attitudes of family members toward children; 3) the social exchange between husband and wife, and 4) the socioeconomic constraints surrounding the marital role relationship.

In general, the analysis shows that except for wife's education, the remaining exogenous variables do not support the hypothesis. In other words, the socioeconomic determinants, except wife's education, influence fertility directly as well as indirectly through sociopsychological and biological variables, thereby providing no support for the hypothesis. The most probable explanation for this finding is that the indicators used to measure gender role egalitarianism and the value of children might fail to capture the realm of social psychological processes. A significant portion of variance is contaminated by measurement errors in these variables (Table 7.3). Moreover, the large amounts of structural errors in these constructs, particularly in subjective cost (.909) and gender role egalitarianism1 (.836) indicates the omission of important variables. Nonetheless, a substantial portion of effects of socioeconomic determinants on fertility is mediated through sociopsychological and biological variables. However, the hypothesis of Bagozzi and Van Loo (1980) that

sociopsychological factors directly influence fertility does not hold true. Evidently, the effects of sociopsychological constructs within and between other constructs are mixed. For example, on the one hand, gender role egalitarianism, related to household activities, acts through other variables to increase fertility. On the other hand, gender role egalitarianism, related to children's activities, acts through other variables to reduce fertility.

With few exceptions, the causal connection between the variables is in the expected direction. But the data provide very little support for the proposed general hypothesis. As indicated earlier, socioeconomic variables continue to play a dominant role in explaining variation in fertility. The lack of contribution made by sociopsychological variables cannot be attributed to the process *per se*, but rather to its indicators selected for measuring the constructs. Many of these indicators, however, are either used or suggested by previous researchers (eg. Scanzoni, 1976). Therefore, we need to develop better measures to understand psychological processes within the family. A study without social psychological factors in either theory or empirical work may lead to a distorted view of the fertility process (Turchi, 1978). The causal model tested here provides some support for Turchi's statement. Although the present model explains about 80% of the variance in fertility, there remains a growing need to create and refine measures that would enable us to better understand the role of sociopsycholgical

factors in fertility decision-making processes.

7.6 Analysis of subgroups

Despite the feeling among researchers in Canada that fertility differentials by ethnicity, religion and region are narrowing (see chapter 4), these differences are still noticeable. Therefore, the intent of this section is to examine the contributions, if there is any, of socioeconomic, psychological and biological factors to these differences. To do so, one could conduct LISREL analysis separately for each of the groups in question. But this would be expensive in terms of computer time use. Therefore, regression decomposition analysis will be used instead (see chapter 4 for the procedure). In this analysis, composite indices will be used to measure a given dimension in place of single indicators, wherever appropriate. Further, the variables relevant to but not included in the causal model (fig 7.2) will also be considered for the analysis.

7.6.1 Ethnic Differences

Table 7.4 presents means and standard deviations of selected variables by ethnic groups and marriage duration classifications. Most of these variables are used in the causal model discussed earlier. However, three new variables--province, religion, and age at marriage--are added, because of their importance in studying fertility differentials. These variables can be grouped under the

Table 7.4 Means and standard deviations for study variables by marriage duration and ethnicity.

	LE 13 yrs			14 + yrs		
	British	French	Others	British	French	Others
FERTILITY	.909	.219	.084	.179	.330	.276
	(.778)	(.868)	(.916)	(1.316)	(1.165)	(1.343)
RESIDENC	2.1470	1.8670	2.1970	2.0600	1.8330	2.0610
	(.778)	(.792)	(.810)	(.809)	(.801)	(.807)
WEDUC	13.1370	12.6520	13.0860	12.4550	10.6010	12.0080
	(2.541)	(2.556)	(2.601)	(2.836)	(3.053)	(2.986)
INTERUPT	2.4360	2.4240	2.3630	2.5690	2.5710	2.4740
	(.813)	(.806)	(.835)	(.797)	(.847)	(.835)
FINSTAT	4.4790	4.6530	4.4740	4.4410	4.6570	4.4740
	(.779)	(.851)	(.862)	(.841)	(.858)	(.826)
GRE	2.5270	3.0170	2.7510	2.0240	2.0970	1.9100
	(1.451)	(1.496)	(1.515)	(1.338)	(1.454)	(1.263)
COSTBENFIT	-.5330	-1.0040	-.6640	-.3690	-.8510	-.4970
	(1.064)	(1.045)	(.969)	(1.162)	(1.068)	(1.023)
AGEMAR	21.6390	21.6840	21.7950	20.2210	20.8340	20.5990
	(3.337)	(2.879)	(3.476)	(2.798)	(3.102)	(2.902)
FPLAN	.7740	.8420	.7680	.6900	.7240	.7080
	(.333)	(.273)	(.337)	(.335)	(.324)	(.323)
INTERVAL	2.6730	2.3540	2.6180	2.5330	1.8170	2.2270
	(3.104)	(2.373)	(2.877)	(3.230)	(2.783)	(2.825)

following broad categories: 1) background/structural factors (province, residence, and religion); 2) economic factors (wife's education, interruptions, and financial status[4]); 3) sociopsychological factors (gender role egalitarianism and cost-benefit of children), and 4) biological factors (fertility planning, birth interval, and age at marriage). A number of other variables were considered for the analysis but found not significant (for example, nativity, husband's relative income, husband's occupation and family income). The variables province and religion are coded as dummy variables. Respondents living in the Atlantic provinces are assigned a value of 1 and those living elsewhere in Canada a value of 0. Similarly a value of 1 is assigned to Catholics and a value of 0 to others.

It is evident from table 7.4 that average family size is higher for French respondents than for British. The difference is more pronounced for respondents married longer than 14 years (-.151). Among respondents in the 'other' category, average family size is lower than the British for those married less than 13 years (.067) while it is higher for those married longer than 14 years (-.097). The difference in average family size between the British and the French and others can be attributed to differences in variable level means. For example, the factors apparently conducive to higher fertility among the French include:

---

[4] Financial status is computed as a combination of financial success and standard of living. A higher score means higher financial status or economic well-being.

growing up in less urbanized areas, lower education, lesser psychic cost of children, and shorter first birth interval. Among respondents in the 'other' ethnic group, factors such as lower number of work interruptions, greater gender role egalitarianism and higher age at marriage act to keep their fertilty level lower than the British for recently married women. On the other hand, lower education, lesser psychic cost of children and shorter birth interval in the 'other' ethnic group may serve to raise the respondents' fertility level above the British for women married longer than 14 years. However, we need to examine the hypothesis that the difference in average family size by ethnic groups is due to their differences in variable level means. In testing this, we keep the British as the reference group.

Table 7.5 presents the results of multiple regression analysis. In addition to metric and standardized coefficients, the Pearson's correlation coefficients are also given. Among respondents married for less than 13 years, number of interruptions, gender role egalitarianism, age at first marriage, and first birth interval exert significant influence on fertility for all three ethnic groups; residence is important for the French (-.119), and others (-.092), and cost-benefit for the French (-.075), in explaining variations in current family size. Age at first marriage and first birth interval are significant in all three ethnic groups among women married 14 or more years. In addition to these two variables, gender role egalitarianism

Table 7.5 Multiple regression analysis of current family size by ethnicity and marriage duration.

	INTERCEPT		RESID	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years												
		b.	.023	.018	.143 (****)	.028	-.098 (****)	.009	-.128 (****)	.107	-.149 (****)	.533
BRITISH N= 407	2.715	B.	.020	.051	.128	.025	-.156	.010	-.469	.039	-.509	
		r.	-.052	-.325	.323	.045	-.289	-.080	-.425	-.068	-.525	
		b.	-.130 (****)	.0001	.151 (****)	.009	-.089 (****)	-.062 (*)	-.107 (****)	-.087	-.151 (****)	.405
FRENCH N= 354	3.009	B.	-.119	.0004	.140	.009	-.154	-.075	-.355	-.027	-.413	
		r.	-.164	-.253	.251	-.060	-.238	-.090	-.348	-.148	-.436	
		b.	-.105 (****)	-.001	.152 (****)	.016	-.125 (****)	-.009	-.105 (****)	-.012	-.143 (****)	.476
OTHERS N= 617	2.906	B.	-.092	-.003	.138	.015	-.206	-.010	-.399	-.004	-.448	
		r.	-.177	-.300	.249	-.002	-.350	-.059	-.372	-.131	-.452	
14 + years												
		b.	.117 (*)	-.037 (*)	.083	-.121 (*)	-.140 (****)	-.049	-.136 (****)	.003	-.135 (****)	.281
BRITISH N= 435	4.079	B.	.072	-.080	.050	-.077	-.142	-.044	-.289	.0008	-.332	
		r.	-.018	-.323	.107	-.074	-.179	-.063	-.321	-.167	-.377	
		b.	-.080	.008	.199 (****)	-.029	.009	-.084	-.117 (****)	-.542 (****)	-.172 (****)	.310
FRENCH N= 305	3.082	B.	-.055	.020	.145	-.021	.012	-.077	-.313	-.151	-.412	
		r.	-.123	-.202	.130	-.063	.004	-.079	-.266	-.236	-.395	
		b.	-.106 (*)	.002	.191 (****)	-.159 (****)	-.020	-.030	-.087 (****)	.144	-.170 (****)	.210
OTHERS N= 566	2.792	B.	-.064	.005	.119	-.098	-.019	-.023	-.187	.034	-.357	
		r.	-.121	-.159	.128	-.128	-.066	-.016	-.209	-.067	-.386	

(-.142), wife's education (-.080), financial status (-.077), and residence (.072) are important in explaining variation in fertility for the British; number of interruptions (.145) for the French; and number of interruptions (.119), financial status (-.098) and residence (-.064) for the 'others' category. Not surprisingly, the effect of education is significant (barely) only on one occasion. This is due to the fact that its effect is confounded by age at first marriage.[5] The regression equations explain a moderate amount of variance in fertility, but less so for respondents married longer than 14 years.

Table 7.6 presents the results of the regression decomposition analyses. The subtotals for component A suggest that the adjustment for differences in variable level means would result in reduction of fertility, except for respondents in the 'others' category married fewer than 14 years. The effects of particular variables in the decomposition suggest that residence, cost-benefit of children, birth interval and gender role egalitarianism are relevant for French women married less than 14 years. For the first three variables, equalization leads to a decline in fertility, while for gender role egalitarianism equalization it increases. Among the French respondents married for 14 or more years, equalization of education (-.0274), cost-benefit (-.0321) and birth interval (-.1102) serve to reduce fertility, while the equalization of age at

---

[5]Analysis without AGEMAR in the regression equation produced significant influence of education on fertility

Table 7.6 Regression decomposition of current family size (net age) by ethnicity

	LE 13 yrs		14 + yrs	
	French	Other	French	Other
Actual difference (British-Others)	-.068	.067	-.151	-.097
Variable levels (A)				
RESIDENC	-.0151	.0021	.0042	.0000
WEDUC	.0045	.0004	-.0274	-.0078
INTERUPT	.0018	.0108	-.0003	.0130
FINSTAT	-.0032	.0001	.0162	.0046
GRE	.0458	.0249	.0048	-.0091
COSTBENFIT	-.0125	.0000	-.0321	-.0051
AGEMAR	.0053	.0182	.0777	.0421
FPLAN	-.0007	.0003	.0092	-.0013
Subtotal	-.022	.049	-.058	-.010
Differences between intercepts	-.294	-.191	.997	1.287
Variable effects (B) (Interaction: ethnicity with variables)				
RESIDENC	.1203	.1014	.1584	.1805
WEDUC	.0464	.0499	-.1311	-.1143
INTERUPT	-.0063	-.0071	-.0953	-.0880
FINSTAT	.0159	.0098	-.0780	.0321
GRE	-.0125	.0400	-.2084	-.1556
COSTBENFIT	.0748	.0186	.0382	-.0215
AGEMAR	-.0642	-.0769	-.0549	-.1411
FPLAN	.0585	.0396	.1795	-.0462
INTERVAL	.0060	-.0185	.1113	.1040
Subtotal	.239	.157	-.080	-.250
Unmeasured (D)	.009	.052	-1.010	-1.124
Total	-.068	.067	-.151	-.097

marriage produces significant increase of fertility (.0777). On the other hand, gender role egalitarianism, age at marriage, and, to some extent, number of interruptions are important for respondents in the 'other' category married for less than 14 years. Equalization in all the variables acts to increase fertility. Similar adjustments for respondents married 14 years or longer show that age at marriage and number of interruptions serve to increase fertility while the adjustment for birth interval has the opposite effect. In general, the equalization of variable means to those of the British produces a significant reduction in fertility for the French and more so for respondents married for 14 years or longer. With regard to respondents in the 'other' ethnic group, such adjustments produce a slight reduction in fertility for respondents married longer than 14 years. The reverse holds true for their counterparts.

Component C, the difference between intercepts, exhibits the main effect or the effect of ethnicity *per se* on fertility. The results indicate that the independent effect of ethnicity is to raise fertility for respondents married fewer than 14 years, while it serves to lower fertility for their counterparts. The effect of ethnicity on fertility is much stronger for those married for a longer period of time. Ethnicity alone would decrease the fertility of the French and 'others' by 1.00 and 1.29 respectively, for those in consensual union for 14 or more years. On the

other hand, it is interesting to note that ethnicity serves to increase the fertility of the French (-.294) and 'others' (-.191) among recently married women. However, the final outcome (i.e. the actual difference in family size between the British and 'other' ethnic groups) in three of the four categories are different from what the ethnic effect or main effect suggests. This difference, then, implies that in addition to ethnicity there may be other factors operating to produce a given family size for a particular ethnic group.

The interaction component B is relatively smaller than the main effect of ethnicity, and more so for respondents married for 14 years or longer. The subtotals reveal that ethnicity interacts with other variables to reduce fertility for respondents married 14 or more years and to increase fertility for more recently married women. Among the respondents married less than 14 years, residence, education, cost-benefit, fertility planning, gender role egalitarianism (for the 'other' ethnic group) and age at marriage are more important factors. Except for age at marriage, the remaining five variables interact with ethnicity to increase average family size. For respondents married 14 or more years, all the variables exhibit significant interactions. The results also suggest that even though residence, fertility planning and birth interval interact strongly to increase fertility, their influence is overshadowed by the negative effect of remaining variables

for the French women. Similarly, for the respondents classified under the 'other' ethnic group, residence, financial status, and birth interval are the only variables appearing to have positive influence on fertility. Note, however, that residence and birth interval serve systematically to increase fertility in both the French and 'other groups. On the other hand, education, interruptions, gender role egalitarianism and age at marriage interact consistently with ethnicity to decrease average family size. Thus, an understanding of the effects of individual variables is important, even though the outcomes of the interactions are negligible.

The unmeasured component D, although it has no substantive interpretation, appears to be substantial for women married 14 or more years, whereas for women married less than 14 years this component is almost nonexistent. Furthermore, the error component is negatively related to fertility for the former and positively for the latter.

The data presented in this study demonstrate that ethnicity has different consequences for women married recently than for those married for a longer period of time. Most surprisingly, the evidence suggests that ethnicity *per se* not only increases fertility, but interacts with other variables to maintain higher levels of reproduction than the British for recently married women. However, the current family size provides support only for the French women. For women in the 'other' ethnic group, the fertility level is

relatively lower than that of the British. These differences can be attributed to lower variable means for the French and higher variable means for the others in relation to the British. The equalization of variable means to those of the British, however, produces only minor adjustments.

Among the respondents married 14 or years or longer, ethnicity *per se* serves to lower fertility and interacts with other variables to maintain a lower level of fertility. The current family size for this group of women, however, seem to be higher than for the British. Furthermore,the equalization of variable means to those of the British are not large enough to attribute the observed difference to the differences in the variable levels. Consequently, a substantial portion of variance remains unexplained.

7.6.2 Religious Differences

Table 7.7 presents means and standard deviations of all the variables in the analysis by religion and marital duration. Catholics, in general, have higher average family size than non-Catholics. Moreover, the difference between these two religious groups is relatively larger for those married 14 or more years (.108) than for those married less than 14 years (.011). With regard to variable means, non-Catholics score relatively higher on residence, education and birth interval, whereas Catholics score higher on fianancial status, gender role egalitarianism, cost-benefit of children, age at marriage and fertility

Table 7.7 Means and standard deviations for study variables by marriage duration and religion.

	LE 13 yrs		14 + yrs	
	CATH	N-CATH	CATH	N-CATH
FERTILITY	.161	.150	.305	.197
	(.882)	(.927)	(1.370)	(1.200)
RESIDENC	1.9960	2.1520	1.9360	2.0540
	(.808)	(.799)	(.809)	(.810)
ATLANTIC	.0960	.0990	.0920	.0890
	(.295)	(.299)	(.290)	(.285)
WEDUC	12.5640	13.1320	10.9920	12.3880
	(2.559)	(2.582)	(2.992)	(2.888)
INTERUPT	2.4140	2.4160	2.5610	2.5130
	(.830)	(.835)	(.843)	(.811)
FINSTAT	4.6220	4.4300	4.5760	4.4550
	(.843)	(.847)	(.864)	(.819)
GRE	2.9580	2.6340	2.1030	1.9290
	(1.518)	(1.481)	(1.424)	(1.260)
COSTBENEFIT	-.9330	-.5620	-.7920	-.3380
	(1.000)	(1.035)	(1.027)	(1.101)
AGEMAR	21.7860	21.5810	20.8510	20.2560
	(3.193)	(3.360)	(2.993)	(2.806)
FPLAN	.8100	.7700	.7170	.7030
	(.307)	(.331)	(.325)	(.329)
INTERVAL	2.2960	2.6420	1.8720	2.4900
	(2.588)	(3.018)	(2.530)	(3.200)

planning (particularly for women married less than 14 years). These differences in variable means suggest that we may able to explain some of the observed fertility differences between these two groups through standardization.

Table 7.8 exhibits results of multiple regression analysis. Of all the independent variables, number of interruptions, gender role egalitarianism, age at marriage, and birth interval stand out as having the strongest effects on fertility. Among Catholic women married less than 14 years, residence and province are the only additional significant variables. Province, financial status, cost-benefit and fertility planning are the significant variables for Catholic women married 14 or more years. For the non-Catholics, surprisingly, the use of contraceptives in planning of fertility increases the current family size significantly. Wife's education is the only variable that appears to be not significant for any of the religious groups. The regression equations explain a moderate amount of variance in fertility for recently married women but less so for their counterparts.

The subtotals for component A from the decomposition analysis (table 7.9) suggest that equalization of variable means of the non-Catholics to those of the Catholics would increase fertility, and to a greater degree among women married 14 or more years. Closer examination of individual contributions made by the variables demonstrates the

Table [illegible] regression analysis of current family size by religion and marriage duration.

	ERCEPT		RESID	ATLANTIC	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years													
CATHOLIC	2.648	b.	-.122 (****)	.159 (*)	-.002	.133 (****)	.020	-.095 (****)	-.017	-.095 (****)	.026	-.144 (****)	.423
N= 745		B.	-.112	.053	-.007	.125	.019	-.163	-.019	-.343	.009	-.422	
		r.	-.179	.114	-.253	.265	-.020	-.288	-.042	-.351	-.145	-.464	
N-CATH	3.198	b.	-.037	-.120	.014	.161 (****)	.002	-.117 (****)	.002	-.134 (****)	.073	-.154 (****)	.523
N= 803		B.	-.032	-.039	.039	.146	.002	-.187	.003	-.484	.026	-.501	
		r.	-.091	.043	-.324	.288	-.016	-.313	-.049	-.423	-.090	-.474	
14 + years													
CATHOLIC	3.212	b.	.006	.817 (****)	.021	.199 (****)	-.158 (****)	-.059 (*)	-.098 (**)	-.109 (****)	-.449 (****)	-.193 (****)	.287
N= 664		B.	.003	.172	.046	.123	-.100	-.062	-.074	-.239	-.107	-.357	
		r.	-.056	.242	-.127	.149	-.150	-.059	-.035	-.226	-.203	-.380	
N-CATH	3.100	b.	-.050	.197	-.023	.085 (*)	-.050	-.066 (**)	-.026	-.112 (****)	.270	-.131 (****)	.245
N= 753		B.	-.033	.047	-.056	.058	-.034	-.069	-.024	-.262	.074	-.349	
		r.	-.118	.103	-.266	.088	-.034	-.117	-.041	-.294	-.069	-.384	

Table 7.9 Regression decomposition of current family size (net age) by religion.

	LE 13 yrs	14 + yrs
Actual difference (Catholics - non-Catholics)	.011	.108
Variable levels (A)		
RESIDENC	.0124	.0026
ATLANTIC	-.0001	.0015
WEDUC	-.0033	.0015
INTERUPT	-.0003	.0068
FINSTAT	.0021	-.0126
GRE	-.0344	-.0109
COSTBENEFIT	.0027	.0282
AGEMAR	-.0234	-.0658
FPLAN	.0020	-.0013
INTERVAL	.0515	.1003
Subtotal	.009	.050
Differences between intercepts (C)	-.550	.112
Variable effects (B) (Interaction: religion with variables)		
RESIDENC	-.0686	.0448
ATLANTIC	.0829	.1782
WEDUC	-.0426	.1310
INTERUPT	-.0240	.0943
FINSTAT	.0153	-.0908
GRE	.0335	.0089
COSTBENEFIT	-.0194	-.0764
AGEMAR	.1268	.0070
FPLAN	-.0151	-.2352
INTERVAL	.0277	-.1789
Subtotal	.116	-.117
Unmeasured (D)	.436	.063
Total	.011	.108

presence of offsetting effects. Among the recently married women, equalization of residence (.0124) and birth interval (.0515) raises fertility, while equalization of gender role egalitarianism (-.0344) and age at marriage (-.0234) decreases fertility. Similarly, among the women married 14 or more years, financial status (-.926), gender role egalitarianism (-.0109) and age at marriage (-.0658) act to decrease fertility; the cost-benefit of children (.0282) and birth interval (.1003) serve to increase fertility. Incidentally, the non-Catholics have lower current fertility than the Catholics, but their fertility level can be reduced further if adjustments are made on some of the variables. Note, however, that the longer first interval and the greater cost associated with children among the non-Catholics seem to be the crucial factors in their current low level of fertility.

The main effect of religion is to increase fertility for the recently married (-.550) and to decrease it for those married longer than 14 years (.112). This finding is rather unexpected. One would normally expect the respondents married for 14 or more years to have been married at a younger age than the recently married, and to hold pronatal values. But this does not seem to be the case for the present study. Surprisingly, the effect of religion *per se* is substantial for the recently married non-Catholics and serves to increase their fertility. However, their current family size is relatively lower than the Catholics'. This

means that there may be other factors operating to maintain their current low level of fertility.

The interaction component B also produces results similar to those of the main effect of religion. The subtotals of the interaction component suggest that religion interacts with other variables in the model to increase fertility for the recently married (.116) and to decrease it for those married for a longer period of time (-.117). Among the recently married women, the interaction effects of residence, education, gender role egalitarianism and age at marriage are relatively greater. The first two variables serve to raise the average family size for the non-Catholics. The next three variables act to reduce average family size. On the other hand, among the women married 14 years or longer, all the variables, except gender role egalitarianism and age at marriage, exhibit strong interaction effect with religion. Note, however, that only four of these variables--financial status, cost-benefit of children, fertility planning and birth interval--interact to reduce fertility. There are some differences between the recently married and their counterparts in terms of the interaction effect of a given variable. Residence, for example, interacts with religion to reduce fertility for the recently married (-.0686), while it increases fertility for those married 14 or more years (.0448). A similar situation emerges for education and interruptions. Financial status and birth interval serve to lower the fertility of those

married for a longer period of time; but the opposite is true for the recently married women. Interestingly enough, evidence suggests that for respondents in the Atlantic provinces religion interacts to increase fertility, irrespective of marital duration.

In sum, the analysis suggests that equalization of variable means produces very minor adjustments. Surprisingly, for the recently married women religion *per se* not only serves to increase fertility but interacts with other variables to raise fertility. The reverse holds true for respondents spending a longer period of time in marital union. Evidently, the results indicate that a substantial portion of variance remains unexplained for the recently married women. This unmeasured component is almost negligible for those in longer marital union.

7.6.3 Regional Differences

In Canadian fertility studies, region plays an important role in understanding fertility differentials. Although regional differences in fertility appear to be narrowing, they remain noticeable. For example, the eastern regions, Saskatchewan, and the Yukon and Northwest Territories have fertility levels above the national average. Researchers have documented these regional differences (Balakrishnan et al., 1979; Henripin, 1972; Mathews, 1976; Trovato and Halli, 1983). The aim of this section is to develop an understanding of the role of

economic, sociopsychological and biological variables in fertility differences between the Atlantic provinces and the rest of Canada.

Table 7.10 presents means and standard deviations of the variables in the analysis by region and marital duration. It is quite evident from the table that Atlantic women have relatively higher average family size than women living elsewhere in Canada. Moreover, the difference is greater for women married 14 years or longer (.773) than for for recently married women (.232).

Atlantic women, in general, are less educated, live in less urbanized areas, interrupt their work more often, feel less economically successful and have a poorer standard of living than other Canadian women. They also maintain lower egalitarianism at home and associate a lower subjective cost with having children. In addition, Atlantic women marry at a relatively younger age, use contraceptives less often in planning their pregnancies, and are likely to have a shorter first birth interval than women outside this region. Essentially, all these indicators promote higher fertility in the Atlantic region.

The results of multiple regression analysis (table 7.11) show that interruptions, gender role egalitarianism, age at marriage, and birth interval are significant in all four equations. Residence appears to be significant only for the recently married women. Note also that religion seems to be one of the strongest predictors for Atlantic women. It

Table 7.10 Means and standard deviations for study variables by marriage duration and region

	LE 13 yrs		14 + yrs	
	CANADA	ATLANTIC	CANADA	ATLANTIC
FERTILITY	.133 (.904)	.365 (.899)	.177 (1.173)	.950 (1.958)
RESIDENC	2.1010 (.811)	1.8530 (.735)	2.0240 (.816)	1.7510 (.176)
CATHOLIC	.4820 (.500)	.4740 (.501)	.4680 (.499)	.4770 (.501)
WEDUC	12.9410 (2.577)	12.0930 (2.551)	11.7860 (3.037)	11.2100 (2.780)
INTERUPT	2.4030 (.823)	2.5200 (.905)	2.5140 (.813)	2.7540 (.924)
FINSTAT	4.5230 (.852)	4.5140 (.833)	4.5150 (.834)	4.4770 (.923)
GRE	2.8030 (1.513)	2.6700 (1.455)	2.0130 (1.340)	1.9790 (1.365)
COSTBENFIT	-.7360 (1.038)	-.7850 (1.010)	-.5480 (1.100)	-.5770 (.990)
AGEMAR	21.7500 (3.310)	21.0390 (2.939)	20.5850 (2.929)	20.0340 (2.663)
FPLAN	.7930 (.319)	.7580 (.326)	.7130 (.328)	.6690 (.319)
INTERVAL	2.5420 (2.813)	1.8620 (2.858)	2.2750 (2.959)	1.4540 (2.390)

Table 7.11 Multiple regression analysis of current family size by region and marriage duration

	INTERCEPT		RESID	CATH	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years													
ATLANTIC	3.151	b.	-.193 (****)	.296 (****)	-.009	.157 (***)	-.010	-.141 (****)	.028	-.111 (****)	.175	-.108 (****)	.529
N= 152		B.	-.158	.165	-.025	.158	-.010	-.228	.032	-.364	.063	-.342	
		r.	-.235	.110	-.403	.419	-.029	-.391	-.107	-.452	-.121	-.451	
CANADA	2.941	b.	-.070	-.030	.005	.147 (****)	.016	-.100 (****)	-.011	-.115 (****)	.041	-.153 (****)	.469
N= 1396		B.	-.063	-.016	.014	.134	.015	-.167	-.013	-.421	.014	-.477	
		r.	-.116	-.005	-.272	.258	-.015	-.288	-.039	-.381	-.111	-.467	
14 + years													
ATLANTIC	6.810	b.	.157	.622 (***)	-.013 (*)	.267 (****)	-.606 (*)	-.185	-.045 (****)	-.179	.219 (****)	-.362	.474
N= 128		B.	.058	.159	-.018	.126	-.286	-.129	-.023	-.244	.036	-.442	
		r.	.023	.193	-.380	.204	-.380	-.158	-.094	-.192	-.260	-.544	
CANADA	2.721	b.	-.050	.003	.003	.120 (****)	-.040	-.043 (**)	-.051 (*)	-.106 (****)	-.051	-.138 (****)	.212
N= 1289		B.	-.034	.001	.008	.083	-.029	-.049	-.047	-.266	-.014	-.348	
		r.	-.090	.017	-.169	.091	-.037	-.072	-.039	-.262	-.112	-.360	

indicates that Catholic women living in Atlantic provinces are likely to have more children than women living elsewhere in Canada. Economic status is the second strongest predictor for Atlantic women married 14 or more years. Overall, the variables in the analysis explain a moderate amount of variance in current family size, except for those living elsewhere in Canada and married for 14 or more years.

The subtotals of component A suggest that there would be a fertility reduction of .232 and .335 for Atlantic women recently married and married for 14 or more years, respectively, if their variable levels were equalized to the means of women elsewhere in the country (Table 7.12). The variables most likely to contribute to the reduction for most recently married women are residence (-.0327), age at marriage (-.0805), birth interval (-.0887) and, to a certain extent, work interruptions (-.0175) and gender role egalitarianism (-.0160). Similarly, among the women married 14 or more years, interruptions (-.0465), age at marriage (-.0787), birth interval (-.2052) and economic status (-.0123) are likely to reduce fertility. Note, however, that equalization of residence (.0147) increases the fertility for this group of women. It is evident from the table that adjustment for age at marriage and birth interval alone would substantially reduce fertility for Atlantic women, irrespective of marital duration.

Component C suggests that, in comparison to the rest of Canada, the independent effect of residence in the Atlantic

Table 7.12 Regression decomposition of current fertility (net age) by region

	LE 13 yrs	14 + yrs
Actual difference (Canada-Atlantic)	-.232	-.773
Variable effects (A)		
RESIDENC	-.0327	.0147
CATHOLIC	.0011	-.0028
WEDUC	-.0017	-.0028
INTERUPT	-.0178	-.0465
FINSTAT	.0000	-.0123
GRE	-.0160	-.0039
COSTBENFIT	.0004	-.0014
AGEMAR	-.0805	-.0787
FPLAN	.0038	.0037
INTERVAL	-.0887	-.2052
Subtotal	-.232	-.335
Differences between intercepts (C)	-.210	-4.089
Variable effects (B) (Interaction: region with variables)		
RESIDENC	.0948	-.1585
CATHOLIC	-.1629	-.3096
WEDUC	.0349	.0452
INTERUPT	-.0093	-.1275
FINSTAT	.0218	.4969
GRE	.0611	.1923
COSTBENFIT	-.0405	-.0061
AGEMAR	-.0112	.2038
FPLAN	-.0433	-.0871
INTERVAL	-.1295	.5995
Subtotal	-.184	.849
Unmeasured (D)	.393	2.802
Total	-.232	-.773

region serves to raise fertility by .210 of a child for recently married respondents and by 4.089 for those married 14 years or longer. The magnitude of the regional effect is substantial in the latter case. Moreover, this effect for the second group is greater than the subtotals of component A, thus indicating that there may be other factors responsible for this region's higher fertility.

As per the interaction component, the subtotals reveal that region interacts with other variables to reduce average family size for the recently married (-.184), while it interacts to raise family size for those married 14 or more years. The effects of individual variables show that the interactions are substantial for all the variables, except for interruptions and age at marriage among the recently married, and cost-benefit of children for those married 14 or more years. For the recently married women, religion, cost-benefit, fertility planning and birth interval interact with region to reduce fertility, while residence, education, financial status and gender role egalitarianism serve to raise family size. Similarly, among women married for 14 or more years, residence, religion, work interruptions and fertility planning act to lower fertility, while education, financial status, gender role egalitarianism, age at marriage, and birth interval serve to raise fertility. The latter interaction effects are much stronger than those for the recently married women.

The unmeasured component is higher than any other for the recently married women (.393), whereas among the women married 14 or more years, it ranks second (2.502) to the main effect of region, but is still substantial. In both groups, these unmeasured factors would enable Atlantic women to have higher fertility.

In general, the findings suggest that equalization of variable means would lead to fertility reductions among the Atlantic females. Region by itself serves to raise fertility, but more so women married for 14 years or longer; it also interacts with other variables to increase the fertility of the latter and to decrease the fertility of recently married women.

Chapter 8

Summary and Conclusions

8.1 Summary of the Thesis

The major objectives of this thesis have been to identify crucial fertility determinants and to develop a causal model of these determinants for women in Canada. Such an inquiry might provide valuable information not only to demographers, but also to politicians concerned with declining fertility. They are concerned with the question of why people want to have any children, rather than with the traditional question of why people want to have more. Answers to these questions hold important socioeconomic and demographic consequences. Therefore, from a policy point of view, it is necessary to identify the variables involved in fertility decision-making before offering any policy suggestions. More specifically, one needs to develop theoretical models to study the determinants of fertility in couples' decision-making processes. These will enhance our understanding of current fertility in Canada and its prospects for the immediate future.

At the theoretical level, the determinants of fertility involve a plethora of variables, many of which are difficult to define and virtually impossible to measure. Nevertheless, scholars from several disciplines have attempted to develop a comprehensive theoretical framework including all relevant variables. Theories from economics, sociology, and

demography focus on the constraining role of environment. Psychological theories begin with people's needs, motives or other mental events to model the primary antecedents of fertility. Among anthropological approaches, several discuss fertility determinants at the societal or cultural level with no reference to couples making decisions, while others focus specifically on these decisions. But none of these theories can be described as a 'theory of fertility'. Therefore, in this thesis no attempt is made to test any particular framework; rather, information available from various frameworks is used to select variables and develop a causal model for the determinants of fertility.

The data for the analysis are taken from the Canadian Fertility Survey, which was conducted from April to June of 1984. The target population was women of all marital statuses in their reproductive years of 18-49, who were accessible by means of a residential telephone number and able to converse over the phone in either French or English. The survey was carried out using centralized telephone interviews in a random sampling of the population chosen according to a two-stage probability selection process. The final sample included 5,315 women with a response rate of 70 percent.

The primary dependent variables used in the analysis are current and expected family size. The sample means of these two variables are 1.98 and 2.43 respectively. Current family size is simply the respondent's total number of live

births. Expected family size is the number of live births plus additional births expected. These two measures have also been adjusted for age by measuring each women's fertility as a deviation from the mean of her age. The independent variables considered for the analysis are grouped into four broad categories: background/structural, economic, sociopsychological, and biological factors.

The analysis involves the use of several techniques in order to achieve the objectives of this thesis. Because of the level of measurement of variables available for the analysis, the first and most predominantly used technique is multiple classification analysis. This technique is used both in bivariate and multivariate analysis to assess the contribution made by individual variables as suggested by a particular theoretical approach. The second technique employed is multiple regression analysis, more specifically, regression decomposition analysis. The rationale for using this technique is to examine fertility differentials by ethnicity, religion, and region. The third technique adopted is LISREL, which is used for the analysis of linear structural relationships. Essentially, this technique allows us to build models closer to the real world.

Chapter 4 examines the relationship between background or structural factors and fertility. It is traditional in demography and sociology to first look at differences on the basis of structural factors. Some researchers feel that structural explanations are inadequate, while others feel

that fertility differentials caused by these factors have narrowed, particularly in recent years. In order to verify this opinion, the following variables have been selected: ethnicity, religion, nativity, residence in youth, education, and family income. These are the variables that have been used most frequently and successfully in Canadian fertility studies. The literature available indicates the prevalence of fertility differentials by structural factors. The Canadian studies show significant inverse relationship between education and fertility. The British group appears to have higher fertility followed by the French and other Europeans. The foreign-born have fewer children than those born in Canada. The Catholics have higher fertility than the non-Catholics; but the differences are relatively smaller than those reported in earlier studies. Fertility differentials by residence and income provide inconclusive evidence in Canadian studies.

The results from bivariate analysis of structural factors demonstrate that education and income continue to play important roles in explaining fertility behaviour. Further, the fertility differentials by religion and ethnicity are relatively smaller, while those by nativity and residence are substantial. These findings remain unchanged even after adjustments for duration of marriage.

The multivariate analysis of structural factors, on the other hand, indicates significant interaction of ethnicity with religion, residence, and women's education, and

religion with nativity and women's education. As a result, ethnicity and religion are combined, and regression decomposition analysis is conducted for ethno-religious groups by using the remaining variables in the model. The British are used as the reference group in the analysis.

The decomposition analysis suggests that the equalization of socioeconomic and demographic characteristics of all the ethnic groups to those of the British would serve to lower fertility among the western Europeans, but would increase it for eastern Europeans and others. Such an adjustment, however, accounts for only a small portion of the variation in fertility. Hence, the fertility differentials between the British and other ethnic groups may not be due merely to differences in socioeconomic and demographic characteristics. The main effect of ethno-religion is overwhelming, and in most cases it is to lower the fertility. This in turn implies that the various norms and values associated with a given group favour smaller family size in relation to the British. Also, ethno-religion interacts systematically with education and duration of marriage to reduce fertility. However, a substantial portion of variance in fertility remains unexplained in the analysis.

In general, the structural factors account for only a small portion of variance in fertility. Religion has no significant influence on fertility when other factors are held constant. However, when religion is combined with

ethnicity, the results show that the average number of children is higher for Catholics in three groups (British, German, and 'Other') than for non-Catholics. Nativity appears to be an important factor for eastern Europeans and 'others', whereas, woman's education and her family income exert strong influence on fertility but vary in magnitude across the groups. The regression decomposition analysis suggests that ethno-religion by itself has significant influence on the various ethnic groups in maintaining their fertility below the level of the British. However, the structural model, even in a heuristic manner, does not capture the realm of how these factors are translated into reduced or increased fertility, as indicated by the substantial amount of unexplained variance.

The role of economic factors in fertility is discussed in chapter 5. The economic approach, in general, claims that fertility decisions are reached through a consideration of relative preferences for children (as compared to other consumer goods), direct and indirect (opportunity) costs of children, and the couple's standard of living. The review of empirical findings on economic factors produces mixed results, but there is a general consensus that these factors do account for a certain amount of variation in fertility. This is particularly true when economic status is measured by potential or relative income rather than by current income. The dependent variables for the analysis include current and expected family size. The independent variables

employed in the analysis are wife's education, husband's education, wife's income, husband's occupational status, family income and work interruptions. In addition, subjective measures, such as couple's standard of living in relation to others, their financial status, their financial plans for the future, and their savings, are also included as proxy variables in order to assess economic well-being.

The examination of bivariate relationships reveals that wife's characteristics, such as education, income, and work interruptions excel in their influence on current family size in comparison to husband's characteristics. Exceptions to this generalization appear to be husband's education and occupation. The subjective measures show the expected inverse relationship with fertility. These measures contribute very little to fertility explanation, except for the variable of savings. Analysis of expected family size produced similar results. Husband's relative income (although not significant) has negative influence on expected family size and positive influence on current family size.

The multivariate analysis of economic factors indicated high correlations of husband's education, husband's income, and family income with other variables. Therefore, they are eliminated from further analysis. Among the remaining variables, six interactions are found to be significant; all these involve standard of living as a common factor. As a result, the analysis is done separately within the levels of

living standard: 'better', 'same', and 'worse'.

The results suggest that wife's education and wife's income have significant inverse relationship with fertility among the respondents who feel their standard of living is 'better' or 'same' in comparison to others in similar age groups. These two variables make no significant contribution for the third level of standard of living (i.e. those who feel their living standard is 'worse'). On the other hand, wife's work interruption demonstrates a significant inverse relationship with fertility in all three levels. In other words, wives with a greater commitment to work have fewer children than their counterparts. Husband's relative income has significant influence on fertility for the last two categories of standard of living. The effect of husband's relative income on fertility is mixed. Among the respondents who feel their standard of living is 'same', relative income has a positive effect; but for those who feel their standard of living is 'worse', it has a negative effect. Husband's occupational status exhibits clear negative influence on fertility; farmers and blue collar workers have more children than white collar workers. Among the subjective measures, only the variable of savings has significant influence in all three levels. Interestingly enough, the respondents who feel their standard of living is 'worse' and save money on a regular basis have more children. Although this finding is contradictory to the general expectation, it may be due to the possibility that these couples have

reached a poor opinion of their standard of living by having more children, which in turn has forced them to save money on a regular basis. It is clear from multivariate analysis that economic factors better explain variation in fertility among those viewing their living standard as 'worse' than others'.

Economic factors, in general, appear to be relatively more important than the structural factors analysed in chapter 4. The traditional variables, such as education, income, and occupation, are found to have the expected influence on fertility, while for the subjective measures the evidence is less than conclusive. Moreover, variables dealing with wife's characteristics have a greater impact on fertility than others. Husband's relative income, which has been used successfully in many studies to explain variation in family size, seems to be less important in the present study. Yet there is some support for the positive relationship between relative income and fertility, even if the pattern is not readily apparent. Evidently, at higher levels of savings and financial planning couples tend to have more children, particularly if they feel their standard of living is 'worse' than others'. Overall, the economic variables selected for the analysis, both subjective and objective, are important in delineating the fertility behaviour of those who are not content with their current living standard.

Chapter 6 focuses on the role of sociopsychological and biological factors in fertility analysis. The latter have received little attention unless they enter into theoretical models as conditioning or explanatory variables, whereas the role of sociopsychological factors has often been criticised and underestimated in fertility analysis. However, these dimensions are considered important in the present context, since they are assumed to mediate the effects of basic determinants (i.e. socioeconomic variables) on fertility. From the literature review, the role of biological or proximate determinants (e.g contraceptive use, birth interval etc.) is clearly understood, but less so in the case of sociopsychological variables. For example, variables such as gender role egalitarianism and value of children produce mixed results. Although most of the studies suggest that egalitarian households would have smaller family size, some studies report otherwise. Similarly, the value of children is related to fertility, but its effect is not in the expected direction. In other words, not all values (benefits) relate to fertility positively; nor do all disvalues (costs) relate to it negatively. Despite such shortcomings, these two components are essential in couples' fertility decision-making and are therefore included in the present analysis.

First, the sociopsychological variables are analysed separately, then they are combined with biological variables to examine the independent effect of the latter. The

sociopsychological dimension is assessed by two concepts: gender role egalitarianism and value of children. The former is measured by the couples' actual sharing of housework and childcare. Approximately six different questions are used for this purpose: for example, 'who does the cooking, housework etc... 1) always you... 2) mostly you... 3) equally... 4) mainly partner.' Similarly, the value of children is measured by the respondents' subjective views of the rewards and costs associated with having children. More specifically, respondents were asked if they strongly agree, agree, disagree, or strongly disagree with such statements as 'having a child provides goals or happiness in life etc.' to assess the benefits and such statements as 'having children distances the spouses 'or' becoming parents means heavy responsibility' to assess the costs of having children. The effects of all the variables are also adjusted by duration of marriage.

The results from bivariate analysis reveal that couples in joint role relationships have fewer children than those in segregated role relationships. However, there are some indications that couples may decide to have smaller family size if activities such as cooking and housework are done mainly by the husband or partner. Conversely, couples may have more children in households where the husband/partner alone is involved in supervision of children's school work and financial decision making. These differentials in fertility behaviour can, to some extent, be attributed to

the attitudes of the husband or partner toward participating in certain household activities. In the present context, it appears that men are less likely to enjoy cooking and housework than supervising children's school work and making financial decisions. With regard to value of children, the subjective benefits of children are linearly related to fertility, while the results are mixed for the subjective costs of children. Apparently, women married for a longer period of time incur higher costs than benefits in having children. The analysis of expected family size produced similar results.

In multivariate analysis, gender role egalitarianism is examined in greater detail in order to answer the following questions: Does the couple's participation in various activities differ by the relative occupational status of the wife? Does the one who contributes less by employment contribute more at home? If there are differentials in participation at home, how are they reflected in the couple's fertility behaviour?

The analysis indicates that equal participation tends to increase with the wife's relative occupational status; but the real increment seems to occur between low and medium categories. Surprisingly, the wife's participation in traditional activities does not seem to decline even when her occupational status is higher than her husband's; in some cases her participation tends to increase considerably. With regard to fertility, when the adjustments are made for

other variables a substantial reduction in mean number of children is observed in the 'mostly partner' categories of the variables 'sharcook' and 'houswork'. On the contrary, couples who share housework equally have more children. The effects for the remaining variables suggest that couples in joint role relationships have fewer children than their counterparts.

The analysis provides some answers for the question of whether the one who contributes less by employment will contribute more at home. In households where either the husband or wife only works, it is evident that the one who works contributes relatively less at home. When we compare another situation, where both spouses either work or don't work, the difference in participation between the husband and wife is magnified, particularly in activities such as cooking, housework and child care. Most of these activities are done mainly by women. In terms of fertility, the findings are similar to those reported for wife's relative occupational status, but there are exceptions. For example, egalitarianism tends to increase family size if activities such as cooking, housework, and supervision of children's school work are equally shared, particularly if neither spouse is not in the labor force. Also, in some cases segregated role relationships result in smaller family size, especially if either one of the spouses works outside the home.

Examination of the effects of value of children on fertility by current labor force status reveals that most of the variables have significant influence on current family size among those respondents in the labor force. No systematic pattern emerges for the variables dealing with the subjective cost of children. Paradoxically, respondents who agree or disagree with the statement that having children means heavy responsibility all have fewer children. Similar results are also obtained for the question of whether having children distances spouses. On the other hand, variables dealing with the subjective benefit of children show the expected positive relationship with fertility. A greater percentage of respondents agree that having a child provides goals, affection, and happiness in life. This is particularly true of women not in the labor force. Such an attitude may be the result of the lower opportunity cost faced by these women. Consequently, they may have a higher mean number of children than their counterparts who disagree that such benefits result from having children. In general, the variables used under the value of children explain only a small portion of the variance in fertility.

In general, the results of sociopsychological variables suggest that gender role egalitarianism is relatively more important than the value of children in explaining variation in fertility. With few exceptions, couples in joint role relationships have fewer children than couples in segregated

role relationships. This supports the findings of previous studies (eg. Scanzoni, 1976; Bagozzi and Van Loo, 1980). Also, among the variables used in value of children, the subjective benefit of children produces the expected relationship with fertility. Respondents who associate greater benefits with having children are likely to have more children. This appears to be true particularly among the respondents not in the labor force. The variables measuring the subjective cost of children turned out to be poor predictors of fertility. In other words, very little variation is demonstrated by these indicators; in most cases respondents associated lower psychic cost with having children. This may not be surprising in a developed society like Canada's, where women make a conscious effort to control their fertility and, more importantly, are able to achieve their desired family size through hedonic calculus.

As mentioned earlier, chapter 6 also examines the link between biological factors and fertility by holding the sociopsychological factors constant. The biological factors considered for the analysis include contraceptive use in planning pregnancies (FPLAN), first birth interval, and duration of marriage. The sociopsychological variables are used here in the form of composite indices.

The correlational analysis suggests that gender role egalitarianism is much more strongly related to biological variables than the value of children. As egalitarianism increases couples use contraceptives in planning pregnancies

and postpone their first birth. Also, respondents married for a longer period of time maintain lower egalitarianism and are of the opinion that having children incurs more cost than benefit. The analysis clearly indicates that fertility is inversely related to planning of pregnancies and birth interval, and positively related to marriage duration.

The preliminary analysis of biological variables suggested the presence of significant interaction between birth interval and marriage duration. Hence, the multivariate analysis for the remaining variables of the model is done separately within the levels of duration of marriage. The biological variables have significant influence on fertility in all categories of marital duration, whereas the sociopsychological variables appear to be significant only among recently married women. But, more importantly, these variables show the expected inverse relationship with fertility, particularly for the value of children. This implies, then, that perhaps the composite indices used here are able to capture better than before the respondents' assessments of subjective costs and benefits. Among the biological variables, birth interval has the expected inverse relationship with fertility. For the variable FPLAN, the relationship is not expected. In other words, those who did not use contraceptives in planning any of their pregnancies have fewer children; evidently, these children were not desired by the respondent at that time. Closer examination reveals that most of these repondents are

currently using contraceptives and that some of them are trying to become pregnant. In general, the biological variables explain a significant portion of variance in fertility in all the categories of marital duration.

The final section (chapter 7) of the thesis attempts to develop a causal model based on the information obtained from previous chapters to study the determinants of fertility. The causal model to be tested is a variant of Bagozzi and Van Loo's theoretical model. The present model hypothesizes that fertility is a direct function of biological variables and an indirect function of sociopsychological and socioeconomic variables. The causal model is tested by means of the LISREL computer program.

The results for the endogenous variables suggest that the effects of social psychological variables on fertility are mixed, while those of biological variables are as predicted. For example, gender role egalitarianism--operationlized by sharing of household chores--influences directly to reduce the use of contraceptives in fertility planning (FPLAN) and the rate of childbearing (birth interval). Although the indirect effects are just the opposite, the final outcome is increased current family size. This further supports the point made earlier that under certain circumstances egalitarianism may serve to increase fertility. Conversely, gender role egalitarianism--operationalized by sharing of activities related to children--influences the couples to have smaller

family size by postponing their first birth and planning their pregnancies with the use of contraceptives. Apparently such a behaviour is not reflected in their attitude towards children. In other words, as egalitarianism increases, the subjective cost, as well as the benefit, associated with having children decreases. In addition, the effects of value of children on biological variables and fertility are not consistent. However, the model supports the hypothesis that social psychological variables influence fertility only through biological variables.

With regard to exogenous variables, all except wife's education have significant direct influence on fertility. The effects of these variables are in the hypothesized directions. However, the paths they take in influencing fertility are different. For example, wife's education influences fertility indirectly through gender role egalitarianism (dealing with household chores), subjective benefit of children and rate of childbearing; the husband's economic status through social psychological processes in general; the degree of commitment (measured by work interruptions) through gender role egalitarianism and subjective benefit of children; the residential status of the respondent in youth mainly through subjective benefit of children; and the duration of marriage through all the endogenous variables, except for the subjective cost of children. However, the model does not support the hypothesis that socioeconomic determinants influence fertility

indirectly through other variables except for wife's education.

In general, with few exceptions, the causal links between the variables are in the expected direction. Although the causal model explains 80% of the variation in fertility, it does not support the general hypothesis. The socioeconomic determinants have direct rather than indirect influence on fertility. This can be attributed to the inability of sociopsychological variables to transmit these effects. The sociopsychological components used in the model involve substantial measurement and structural errors. Moreover, the causal connections among the sociopsychological concepts are mixed. But the indirect effects of these variables on fertility provide partial support for the general hypothesis.

This section has also examined fertility differentials by ethnicity, religion, and region. In addition to variables used in the causal model, a few extra variables are included because of their importance in studying fertility differentials. Regression decomposition analysis is used to study the fertility differentials.

The results from the decomposition analysis for ethnicity suggest the following. Socioeconomic, sociopsychological, and biological variables contribute very little to an understanding of fertility differentials among the British, the French and 'other' ethnic groups. Moreover, ethnicity has different consequences for women married

recently than for those married for a longer period of time. Surprisingly, among the recently married women, ethnicity *per se* not only increases fertility, but interacts with other variables to maintain higher levels of reproduction than those shown for the British. Among the respondents married for 14+ years the interaction tends to minimize in family size. But the examination of the effects of individual variables suggests the presence of offsetting effects. Overall, a substantial portion of variance remains unexplained by the model, particularly for those married for a longer period of time. Similar conclusions are also reached from the decomposition analysis of religion.

With regard to region, the decomposition analysis suggests that there would be a sizeable reduction in fertility if Atlantic women were to develop characteristics similar to women elsewhere in Canada. Further, region *per se* serves to raise fertility, but more so for women married for 14+ years. It also interacts with other variables to increase the fertility of the latter and to decrease fertility of recently married women.

The general conclusion that may be drawn from this thesis is that biological or proximate factors are most important in explaining variation in fertility, followed by socioeconomic factors, structural factors, and sociopsychological factors, in that order. The notion that socioeconomic factors influence fertility indirectly through the sociopsychological process gains little or no support

from the analysis. Moreover, objective rather than subjective economic dimensions appear to be more important in fertility analysis. Fertility differentials by structural factors do exist; but they are relatively smaller than in previous studies. Sociopsychological factors emerge as the least important component in fertility explanation. Furthermore, these factors exhibit no systematic relationship with fertility; in some cases, the results are confusing. However, gender role egalitarianism remains a better predictor of fertility than the value of children.

8.2 Broader Relevance of the Thesis

This study has provided a detailed examination of fertility determinants and modelled them in order to offer a better understanding of the decision-making process among women in Canada. It has also made an important contribution to Canadian fertility research by incorporating more essential components of fertility and using a sounder methodology than have so far been demonstrated by any Canadian studies. Many of the areas investigated in this thesis were suggested by demographers during a special workshop held by Statistics Canada in 1981. Therefore, these findings will provide valuable information for future fertility research in Canada.

Structural factors, viewed by many as inadequate for fertility explanation, continue to be important in certain situations. Particularly when religion is combined with

ethnicity, fertility differentials among certain groups are proliferated. Although these differentials are smaller, in a multicultural society like Canada's analysis of structural factors will enable us to comprehend how intermediate variables operate under a given normative structure. In fact, the study suggests the existence and persistence of group differentials in fertility due to differences in operation of these intermediate variables.

The sociopsychological component, which has received little attention in fertility studies, continues to exhibit poor relationship with fertility. But there is evidence suggesting that this component needs to be taken seriously in fertility decision-making models. For example, gender role egalitarianism emerges as the most significant variable among sociopsychological facors in explaining variation in fertility. In contrast to opinions held by previous researchers, the findings suggest that it is not egalitarianism *per se* but rather the context of egalitarianism that seems to be more relevant in fertility decision-making processes. On the other hand, the value of children, used in many studies (eg. Arnold et al., 1975), offers no conclusive evidence of its relationship with fertility. This lack of evidence can be attributed to errors involved in measuring a given concept rather than to the process itself.

Economic factors emerge as by far the most important of all the variables (except biological) in fertility

decision-making considered for the analysis. More importantly, objective economic measures contribute a great deal more to an explanation of variation in fertility than subjective measures, even though the latter are often suggested as more appropriate to an assessment of economic well-being. When controlled for other variables used in the model, economic determinants tend to have direct influence on fertility. This finding, in a way, does not support the hypothesis that socioeconomic factors influence fertility through other variables. But this by no means indicates that economic factors are far superior to others in fertility decision-making; rather, it suggests that intermediate variables transmitting the effects of socioeconomic factors to fertility are simply poor.

8.3 Suggestions for Future Research

Although the variables used in the analysis are able to explain a significant portion of variation in fertility, some of the relationships between variables are not clear or straightforward. Our understanding of fertility phenomena, however, could be further improved if certain areas of the investigation were refined.

For example, the indicators used to measure the sociopsychological component suffer from measurement errors. In addition, very little variation is observed among these indicators, particularly for the value of children. The role of these factors in fertility decision-making may be

substantial in the near future because of an upsurge in marital dissolutions, single parenthood, and the dual role of women. Therefore, future research should use more carefully selected and more refined measures to capture the sociopsychological dimension. This is also true to some extent for the subjective measures used to assess the economic well-being of couples.

The model used in this thesis is assumed to be recursive, but this may not be valid in some cases. For example, gender role egalitarianism and taste or attitude toward children are also likely to be a function of fertility. One could unveil interesting relationships among these variables if one performed analyses according to the parity of women.

Finally, the fertility decision-making process cannot be fully understood without incorporating husband-wife interactions, more specifically responses from both spouses. Studies indicate that women's reports about their partners do not agree with reports from the men themselves. Furthermore, the discrepancies between men's and women's reports of the same event are overwhelming. Therefore, information required for fertility analysis needs to be collected from both the husband and wife separately. Or, at the very least, information from husbands should be based on subsamples. Essentially, this information would allow us to study in greater detail the husband-wife interaction in fertility decision-making.

BIBLIOGRAPHY

Andrews, Frank., James N. Morgan., John A. Sonquist and Laura Klem
1973 Multiple Classification Analysis: A Report on a Computer Program for Multiple Regression Using Categorical Predictors. Survey Research Centre, University of Michigan, Ann Arbor, Michigan. 104 p.

Arnold, F., R.A. Bulatao., C. Buripakadi., B.J. Chung., J.T. Fawcett., T. Iritani., S.J. Lee., and T.-S. Wu
1975 The Value of Children: Introduction and Comparative Analysis, Vol. I. Honolulu: East-West Population Institute.

Back, K.W., and P.H. Hass
1973 Family structure and fertility control. In J.T. Fawcett (ed.), Psychological Perspectives on Population. New York: Basic Books.

Bagozzi, Richard P. and M.F. Van Loo
1978a Fertility as consumption:theories from the behavioral sciences. Journal of Consumer Research, 4:199-228.

Bagozzi, Richard P. and M.F. Van Loo
1978b Toward a general theory of fertility: a causal modelling approach. Demography, 15:301-320.

Bagozzi, Richard P. and M.F. Van Loo
1980 Decision-making and fertility: a theory of exchange in the family, pp. 91-124. In T.K. Burch(ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-Making. Westview Press, Inc. 242 p.

Bahr, Stephen J., Bruce A. Chadwick and Joseph H. Stauss
1975 The effect of relative economic status on fertility. Journal of Marriage and the Family 37(May):335-343.

Balakrishnan, T.R., G.E. Ebanks and C.F. Grindstaff
1979 Patterns of Fertility in Canada, 1971. Ottawa: Statistics Canada, Catalogue No. 99-759E; 1971 Census Monograph.

Balakrishnan, T.R., J.F. Kanter and J.D. Allingham
1975 Fertility and Family Planning in a Canadian Metropolis. Montreal: McGill-Queen's University Press.

Balakrishnan, T.R., Karol J. Krotki., and E. Lapierre-Adamcyk
1985 Contraceptive use in Canada, 1984. Family Planning Perspectives, 17, 209.

Bartlett, Peggy F.
1980 The anthropological approach to fertility decision-making, pp. 163-183. In T.K. Burch(ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-Making. Boulder, Colo.: Westview Press.

Bean, F.D and C.H. Wood
1974 Ethnic variations in the relationship between income and fertility. Demography, 11:629-640.

Beaujot, R
1975 Ethnic Variations in Fertility in Edmonton. Unpublished Ph.D thesis, University of Alberta.

Beaujot, R.
1978 Canada's Population: Growth and Dualism. Population Bulletin, Vol. 32, 2. Population Reference Bureau, Inc.

Beaujot, R., Karol J. Krotki and P. Krishnan
1978 Socio-cultural variations in the applicability of the economic model of fertility. Population Studies, 32(1):319-325.

Beaujot, R., Karol J. Krotki and P. Krishnan
1982 Analysis of ethnic fertility differentials through the consideration of assimilation. International Journal of Comparative Sociology, 23(1):52-59.

Becker, G.S.
1960 An economic analysis of fertility, pp 209-231. In Demographic and Economic Change in Developed Countries. National Bureau of Committee for Economic Research. Princeton: Princeton University Press.

Becker, G.S.
1965 A theory of allocation of time. Economic Journal, Vol. 75, no. 229 pp 493-517.

Becker, G.S.
1981 A Treatise on the Family. Cambridge, Mass: Harvard University Press.

Beckman, L.J.
1978 Couples' decision-making processes regarding fertility, pp. 57-81. In K.E. Taeuber, L.

Bumpass, and J.A. Sweet (eds.), Social Demography. New York: Academic Press.

Beckman, L. J.
1980 The relative influence of husband versus wife in fertility decision-making. Paper presented at the Eigth Annual Workshop on Psychological Factors in Population Research, April 8-9, Denver, Colorado.

Beckman, L.J.
1981 The relationship between sex roles, fertility, and family size preferences. Psychological Abstracts, 65:18-49.

Beckman, L.J.
1982 Measuring the process of fertility decision-making, pp. 73-95. In Greer L. Fox (ed.), The Childbearing Decision: Fertility Attitudes and Behavior. Sage Publications, Inc.

Ben-Porath, Yoram
1973 Economic analysis of fertility in Israel: point and counterpoint. Journal of Political Economy Supplement: S202-S233.

Bergmann, Barbara R.
1986 The Economic Emergence of Women. New York: Basic Books, Inc. 372 p.

Bernhardt, E.M.
1972 Fertility and economic status: Some recent findings on differentials in Sweden. Population Studies, 26(2): 175-84.

Blake, Judith
1966 Ideal family size among white Americans: a quarter of a century's evidence. Demography, 3:154-173.

Blake, Judith
1967 Income and reproductive motivation. Population Studies 21(3):185-206.

Blake, Judith
1968 Are babies consumer durables? A critique of the economic theory of reproductive motivation. Population Studies, 22(1):5-41.

Blake, Judith
1974 Can we believe recent data on birth expectations in the United States? Demography, 11(1):25-44.

Blake, J. and Jorge Del Pinal
1982 Educational attainment and reproductive preferences: theory and evidence. In Charlotte, Hohn and R. Mackensen(ed.), Determinants of Fertility Trends: Theories Re-examined. IUSSP.

Blau, P.M. and O.D. Duncan
1967 The American Occupational Structures. New York:Wiley. 520 p.

Bongaarts, J.
1978 A framework for analyzing the proximate determinants of fertility. Population and Development Review, 4(1):105-132.

Bongaarts, J.
1982 The fertility-inhibiting effects of the intermediate fertility variables. Studies in Family Planning, Vol. 13(67):179-89.

Bulatao, R.A.
1981 Values and disvalues of children in sequential childbearing decisions. Demography, 18:1-26.

Bulatao, R.A. and James T. Fawcett
1983 Influences on childbearing Intentions Across the Fertility Career: Demographic and Socioeconomic Factors and the Value of Children. Papers of the East-West Population Institute. No.60-F.

Bulatao, R.A and D. Lee with P.E. Hollerbach and J. Bongaarts (eds.)
1983 Determinants of Fertility in Developing Countries. New York: Academic Press.

Bumpass, Larry and Charles E. Westoff
1970 The Later Years of Childbearing. Princeton: Princeton University Press.

Burch, T.K.
1966 The fertility of North American Catholics: A comparative overview. Demography 3:174-186.

Cain, G.G. and A. Weininger
1973 Economic deteminants of fertility:results from cross-sectional analysis of aggregate data. Demography 10:205-223.

Caldwell, John C.
1976 Toward a restatement of demographic transition theory. Population and Development Review, 2(3):321-66.

Caldwell, John C.

1978 A theory of fertility:from high plateau to destabilization. Population and Development Review, 4(4):553-578.

Canada, Statistics Canada
1988 Canada Yearbook. Ottawa: Minister of Supply and Services Canada.

Canada, Statistics Canada
1978 Vital Statistics 1977-78, Vol. 1, Ottawa.

Canada, Statistics Canada
1982 1981 Census of Canada. Cat. Nos. 90-901, 92-911, 92-912, 92-913.

Canada, Statistics Canada
1986 Vital Statistics, Births and Deaths. Cat. 84-204, Annual.

Carisse, Colette
1964 Plantification des Naissances en Milieu Canadian-Francais. Montreal:Presses de L'Universite de Montreal.

Charles, Enid
1948 The changing size of the Family in Canada. Census Monograph No.1. Ottawa:Queen's Printer.

Chaudhury, Rafiqul Huda
1977 Relative income and fertility. Demography, 14(2):179-195.

Clifford, William B. and Patricia L. Tobin
1977 Labor force participation of working mothers and family formation: some further evidence. Demography, 14(3):273-284.

Cochrane, S.H.
1979 Fertility and Education: What do We Really Know? Baltimore, Md: The John Hopkins University Press.

Coleman, J.S., Z.D. Blum., A.B. Sovensen., and P.H. Rossi
1972 White and black careers during the first decade of labor force experience. Part I: occupational status. Social Science Research, 1:243-270.

Collishaw, N.P.
1976 Fertility in Canada. Ottawa: Statistics Canada.

Crimmins-Gardner, Eileen and Phyllis A. Ewer
1982 Relative and potential income and fertility. Canadian Studies in Population Vol 9:95-108.

Davis, Kingsley

1950 Human Society. New York: Macmillan.

Davis, K
1959 The sociology of demographic behavior, pp. 309-333. In Robert, Merton (ed.), Society Today: Problems and Prospects. New York: Basic Books.

Davis, K
1984 Wives and work: consequences of the sex role revolution. Population and Development Review vol. 10(3):397-417.

Davis, K and Judith Blake
1956 Social structure and fertility: an analytic framework. Economic Development and Cultural Change, 4(3):211-235.

Duesenberry, J.S.
1960 Comment, pp. 231-34. In National Bureau of Economic Research, Demographic and Economic Change in Developed Countries. Princeton: Princeton University Press, 536p.

Duncan, O.D.
1964 Residential areas and differential fertility. Eugenics Quarterly, 11:82-89.

Duncan, O.D.
1965 Farm background and differential fertility. Demography, 2:240-249.

Easterlin, R.A.
1966 On the relation of economic factors to recent and projected fertility changes. Demography, 3:131-153.

Easterlin, R.A.
1969 Toward a socioeconomic theory of fertility: a survey of recent research on economic factors in American fertility, pp. 127-156. In Samuel J. Behrman., L. Corsa, Jr., and R. Freedman (eds.), Fertility and Family Planning: A World View. Ann Arbor: The University of Michigan Press.

Easterlin, R.A.
1973 Relative economic status and the American fertility swing. In Sheldon Eleanor Bernert(ed.), Family Economic Behaviour: Problems and Prospects. Philadelphia: J.B. Lippincott, Co.

Easterlin, R.A.
1975 An economic framework for fertility analysis. Studies in Family Planning, 6:54-63.

Easterlin, R.A.
1978 The economics and sociology of fertility: a synthesis. In Charles Tilley (ed), Historical Studies of Changing Fertility. Princeton University Press.

Elahi, Virginia K.
1973 A family planning survey in Halifax, Nova Scotia. Canadian Journal of Public Health, 64(4):515-520.

ESCAP
1974 Husband-Wife Communication and Practice of Family Planning. Bangkok, Asian Population Studies Series, No.16. New York: United Nations.

Espenshade, T.
1972 The price of children and socioeconomic theories of fertility. Population Studies, 26(2):207-221.

Fawcett, J.T.(ed.)
1972 The Satisfactions and Costs of Children: Theories, Concepts and Methods. Honolulu: East-West Population Institute.

Fawcett, J.T., S. Albores and F. Arnold
1972 The value of children among ethnic groups in Hawaii: exploratory measurements, pp. 234-257. In J.T. Fawcett(ed.), The Satisfactions and Costs of Children: Theories, Concepts, and Methods. Honolulu:East-West Population Institute.

Farooq, Ghazi and George B. Simmons (ed.)
1985 Fertility in Developing Countries: An Economic Perspective on Research and Policy Issues. The Macmillan Press Ltd, Hong Kong.

Fishbein, M.
1972 Towards an understanding of family planning behavior. Journal of Applied Social Psychology, 2:214-227.

Freedman, Deborah S.
1963 The relation of economic status to fertility. The American Economic Review 53(June):414-426.

Freedman, Deborah S. with Eva Mueller
1974 Economic Data for Fertility Analysis: World Fertility Survey, Occasional Papers, No. 11. International Statistical Institute, The Netherlandss.

Freedman, Deborah S. and Arland Thornton
1982 Income and fertility: the elusive relationship. Demography 19(1):65-78.

Freedman, R.
1961-62 The Sociology of human fertility: a trend report and bibliography. Current Sociology, 10-11(2):35-121.

Freedman, R.
1962 The American studies of family planning and fertility: a review of major trends and issues, pp 211-27. In C.V. Kiser (ed.), Research in Family Planning. Princeton: Princeton University Press. 664 p.

Freedman, R.
1975 The Sociology of Human Fertility: An Annotated Bibliography. New York: Irbington Publishers 3-21.

Freedman, R and Lolangene C. Coombs
1966 Childspacing and family economic position. American Sociological Review 31:631-648.

Freedman, R. and D.P. Slesinger
1961 Fertility differentials for the indigenous non-farm populations of the United States. Population Studies 15:161-173.

Freedman, R., Pascal K. Whelpton and Arthur A. Campbell
1959 Family Planning Sterility and Population Growth. New York: McGraw-Hill.

Friedman, M.
1957 A Theory of Consumption Function. Princeton: Princeton University Press.

George, M.V. and A. Romanuik
1971 Patterns and factors of fertility decline in Canada 1960's. Paper presented at the sixth annual meeting of the Canadian Sociology and Anthropology Association. Memorial University, St. John's.

Goldberg, David
1958 Family Role Structure and Fertility. Ann Arbor: University Microfilms.

Goldberg, D.
1960a Some Recent Developments in Fertility Research. Princeton: Princeton University Press.

Goldberg, D.
1960b Another look at the Indianapolis fertility data. Milbank Memorial Fund Quarterly, 38:23-36.

Goldberg, D.

1975 Socioeconomic theory and differential fertility: the case of the LDC's. Social Forces 54(1):84-106.

Goldberg, D., Harry Sharp and R. Freedman
1959 The stability and reliability of expected family size data. Milbank Memorial Fund Quarterly 37(4):369-385.

Goldscheider, C.
1971 Religion, minority group status and fertility, pp. 270-298. In C. Goldscheider, Population, Modernization and Social Structure. Boston:Little, Brown. 345 p.

Goldscheider, C., and P.R. Uhlenberg
1969 Minority group status and fertility. American Journal of Sociology 74:361-372.

Grindstaff, Carl F.
1975 The baby bust: changes in fertility patterns in Canada. Canadian Studies in Population, 2:15-22.

Grindstaff, Carl F.
1981 Population and Society: a Sociological Perspective. West Hanover, Mass: Christopher Publishing House. 161 p.

Halli, S.S.
1987 How Minority Status Affects Fertility: Asian Groups in Canada. Connecticut:Greenwood Press, Inc. 196 p.

Hass, P.H.
1972 Maternal role incompatibility and fertilty in Latin America. Journal of Social Issues 28(2):111-28.

Hass, P.H.
1974 Wanted and unwanted pregnancies: a fertility decision-making model. Journal of Social Issues 30:125-165.

Hawthorn, G.
1970 The Sociology of Fertility. London: Collier-MacMillan, Ltd.

Heer, D.M.
1962 Husband and wife perceptions of family power structures. Marriage and Family Living, 24:65-67.

Henripin, Jacques
1968 Trends and Factors of Fertility in Canada. Census

Monograph, 1961 Census of Canada. Ottawa. Dominion Bureau of Statistics, 425p.

Henripin, Jacques
1972 A fertility survey in Quebec. Unpublished paper presented at Population Association of America meetings.

Henripin, Jacques and Evelyn Lapierre-Adamcyk
1974 La Fin de la Revanche des Berceaux:Qu'en Pensent les Quebecoises. Montreal: Les Preses de l' Universite' de Montreal.

Henripin, Jacques and Jacques Legare
1971 Recent trends in Canadian fertility. Canadian Review of Sociology and Anthropology 8(2):106-113.

Hobart, C.
1981 Sources of egalitarianism in young unmarried Canadians. Canadian Journal of Sociology 6(3):261-82.

Hoffman, Lois W.
1973 A psychological perspective on the value of children to parents: concepts and measures. In J. Fawcett(ed.), Psychological Perspective on Population. New York: The Population Council.

Hoffman, L.W. and M.L. Hoffman
1973 The value of children to parents, pp. 19-76. In J.T. Fawcett (ed.), Psychological Perspectives on Population. New York: Basic Books.

Hoffman, L.W. and Frederick Wyatt
1960 Social change and motivations for having larger families: some theoritical considerations. MerrillPalmer Quarterly, 6:235-54.

Holter, H.
1970 Sex Roles and Social Structure. Oslo: Universitet-Forlaget.

Hull, T.H.
1983 Cultural influences on fertility decision styles, pp. 381-414. In R.A. Bulatao., R.D. Lee with P.E. Hollerbach and J. Bongaarts(eds.), Determinants of Fertility in Developing Countries. Vol. 2. New York: Academic Press.

Jackson, J.
1972 Role. London: Cambridge University Press.

Janowitz, B.

1976 An analysis of impact of education on family size. Demography, 13:189-198.

Jiobu, R. and H. Marshall
1977 Minority status and family size: a comparison of explanations. Population Studies, 31:509-517.

Johnson, N.E. and Ryoko Nishida
1980 Minority group status and fertility: a study of Japanese and Chinese in Hawaii and California. American Journal of Sociology, 86(3):496-511.

Johnson, N.E., C. Stokes., and R.H. Warland
1978 Farm-non-farm differentials in fertility: the effects of compositional and sex-role factors. Rural Sociology 43:671-90.

Jones, E. and C. Westoff
1979 The end of Catholic fertility. Demography 16:209-217.

Joreskog, K.G.
1973 A general method for estimating a linear structural equation system. In A.S. Goldberger and O.D. Duncan(eds.) Structural Equation Models in the Social Sciences. New York: Seminar Press.

Joreskog, K.G.
1977 Structural equation models in the social sciences: specification, estimation, and testing, pp. 265-287. In P.R. Krishniah (ed.), Applications of Statistics. Amsterdam: North-Holland Publishing Co.

Joreskog, K.G.
1978 Structural analysis of covariance and correlation matrices. Psychometrika 43:443-477.

Joreskog, K.G. and Dag Sorbom
1986 LISREL: Analysis of Relationships by the Method of Maximum Likelihood. Users Guide, Version VI. University of Uppsala, Sweden.

Kalbach, W.E. and W.W. McVey
1979 The Demographic Bases of Canadian Society (2nd ed.). Toronto,Ontario: McGraw-Hill Ryerson.

Kayani, A. and P. Krishnan
1973 Fertility decline in Canada 1961-1970: an analysis through the life table approach, pp.302-306. In proceedings of the Social Statistics section American Statistical Association.

Kenkel, W.F
1957 Influence differentian in family decision-making. Sociology and Social Research 42:18-25.

Kiser, C.V. and P.K. Whelpton
1953 Resume of the Indianapolis study of social and psychological factors affecting fertility. Population Studies, 7(2):95-110.

Kiser, C.V. and P.K. Whelpton
1958 Summary of the chief findings and implications for future studies, pp. 1325-72. In P.K Whelpton and C.V. Kiser (eds.), Social and Psychological Factors Affecting Fertility, Vol. 5. New York: Milbank Memorial Fund.

Krishnan, P. and Karol J. Krotki
1976 Growth of Alberta Families Studies (GAFS): A Report to Health and Welfare Canada on Questionnaires Collected from 1,045 women of Edmonton in the Winter of 1973-74. Edmonton, Alberta: Population Research Laboratory.

Krotki, Karol J. and Evelyne Lapierre
1970 Translation of the article."La fecondite au Canada, selon la religion, l'origine ethnique, et l'etat matrimonial". Population 23(5):815-834, September-October, 1968.

Kunz, Phillip R.
1966 The relation of income and fertility. Journal of Marriage and the Family, Nov:509-513.

Kupinsky, Stanley (ed.)
1977 The Fertility of Working Women: A Synthesis of International Research, New York: Praeger Publishers.

Lancaster, K.J.
1965 A new approach to consumer theory. Journal of Political Economy, 74(2):132-57.

Lapierre-Adamcyk, E.
1979 Socioeconomic Correlates of Fertility in Canadian Metropolitan Areas, 1961 and 1971. Census of Canada. Ottawa: Statistics Canada. 101 p.

Legare, J.
1974 Demographic highlights of fertility decline in Canadian marriage cohorts. Canadian Reviews of Sociology and Anthropology 11:287-307.

Leibenstein, H.
1957 Economic Backwardness and Economic Growth. John

Wiley and Sons, New York. 295 p.

Leibenstein, H.
1974 An interpretation of the economic theory of fertilty: promising path or blind alley? Journal of Economic Literature 12:457-479.

Leibenstein, H.
1975 The economic theory of fertility decline. The Quarterly Journal of Economics, Vol.89(Feb):1-31.

Leibenstein, H.
1981 Economic decision theory and human fertility behavior. Population and Development Review, 7:381-400.

Leridon, H.
1982 Overview, pp. 297-365. In Charlotte Hohn and R. Mackenson(ed.), Determinants of Fertility Trends: Theories Re-examined. IUSSP.

Long, Larry H.
1970 Fertility patterns among religious groups in Canada. Demography 7(2):135-149.

Lopez, D. and G. Sabah
1978 Untanling structural and normative aspects of the minority status-fertility hypotheses. American Journal of Sociology 83:1491-1497.

Lorimer, F.
1954 Culture and Human Fertility. Zurich:UNESCO, Paris. 510 p.

MacDonald, Maurice M. and Ronald R. Rindfuss
1978 Relative economic status and fertility:evidence from a cross-section, pp. 291-307. In Julian L. Simon (ed.), Research in Population Economics, Vol. 1. Connecticut: Jai Press, Inc.

Mathews, R.
1976 There's No Better Place Than Here: Social Change in Newfoundland Communities. Toronto: Peter Martin Associates.

Mauldin, W.P.
1965 Fertility studies:knowledge, attitudes, and practices. Studies in Family Planning, 7:1-10.

McDaniel, Susan A.
1978 Family Size Expectations in Edmonton: A Cohort Approach. Unpublished Ph.D thesis, University of Alberta.

Mincer, Jacob
1972 Labor force participation of married women. In H. Gregg Lewis (ed.), Aspects of Labour Economics, National Bureau of Economics Research, Universities National Bureau Conference Series, no. 14. Princeton: Princeton University Press.

Mincer, J.
1963 Market prices, opportunity cost and income effects, pp.63-65. In Carl F. Christ(eds.). Measurement in Economics. Stanford, Calif: Stanford University Press.

Mosher, William D. and Gerry E. Hendershot
1984 Religion and fertility: a replication. Demography 21(2):185-191.

Namboodiri, N.K.
1970 On the relation between economic status and family size preferences when status differentials in contraceptive instrumentalities are eliminated. Population Studies 24(2):233-239.

Namboodiri, N.K.
1972 Some observations on the economic framework for fertility analysis. Population Studies 26(2):185-206.

Namboodiri, N.K.
1980 A look at fertility model-building from different perspectives, pp.71-90. In T.K. Burch(ed.) Demographic Behavior on Decision-making. Westview Press, Inc.

Nathanson, C.A
1979 Sex, illness, and medical care. Social Science and Medicine, 11: 13-25.

Notestein, Frank
1945 Population, the long view. In T.W. Schultz(ed.), Food for the World. Chicago: University of Chicago Press.

Peterson, W.
1969 Population. New York: Macmillan. 735 p.

Pinelli, A.
1971 Female labour and fertility in relationship to contrasting social and economic conditions. Human Relations 24:603-610.

Polgar, S. and F. Rothestein
1970 Family planning and conjugal role in New York

city poverty areas. Social Science and Medicine 4:135-139.

Pool, Janet E.
1975 Female reproductive behavior Part I: Report on a study carried out in Ottawa, 1972-73. Unpublished paper. Ottawa: Department of Epidemiology and Community Medicine, University of Ottawa.

Presser, H.B.
1977 Female employment and the division of labour within the home: longitudinal perspective. Paper presented at the P.A.A. meetings, St. Louis, April 20-23.

Rainwater, Lee
1960 And the Poor Get Children. Chicago:Quadrangle.

Rainwater, Lee
1965 Family Design: Marital Sexuality, Family Size, and Contraception. Chicago: Aldine.

Ram, B.
1976 Regional-subcultural explanations of black fertility in the United States. Population Studies 30(3):553-59.

Reed, Fred W., J. Richard Udry., and Maxines Ruppert
1975 Relative income and fertility: the analysis of individuals' fertility in a biracial sample. Journal of Marriage and the Family 37(4):799-805.

Rindfuss, Ronald R., Larry Bumpass., and Craig St. John
1980 Education and fertility:implications for the roles women occupy. American Sociological Review, Vol. 45(June): 431-447.

Robinson, P.
1987 Women's Work Interruptions: Results From the 1984 Family History Survey. Statistics Canada. Catalogue No. 99-962, 36 p.

Robinson, Warren C. and Sarah F. Harbinson
1980 Toward unified theory of fertility, pp. 201-235. In T.K. Burch (ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-making. Westview Press, Inc.

Romanuik, A.
1981 Increase in natural fertility during the early stages of modernization: Canadian Indians case study. Demography, 18:152-172.

Romanuik, A.

1984 Current Demographic Analysis. Fertility in Canada: From Baby-boom to Baby-bust. Statistics Canada, 91-524.

Romanuik, A. and V. Piche
1972 Natality estimates for Canadian Indians by stable populations models. Canadian Review of Sociology and Anthropology, 9:1-20.

Ryder, Norman B.
1973 A critique of the national fertility study. Demography, Vol.10(4):495-506.

Ryder, Norman B. and C.F. Westoff
1971 Reproduction in the United States. Princeton: Princeton University Press. 419 p.

Sabol, M.G.
1974 Commitment to work. In L.W. Hoffman and F.I. Nye (ed.), Working Mothers. San Francisco.

Safilios-Rothschild, C.
1969 Family sociology or wives' family sociology? A cross cultural examination of decision-making. Journal of Marriage and the Family, 31: 290-301.

Saflios-Rothschild, C.
1971 Toward a conceptualization and measurement of work commitment. Human Relations, 24:689-93.

Saflios-Rothschild, C.
1972 The relationship between work commitment and fertility. International Journal of Society of the Family, 2:64-71.

Scanzoni, J.H.
1972 Sexual Bargaining: Power Politics in American Marriage. Englewood Cliffs, New Jersey: Printice-Hall.

Scanzoni, J.H.
1975 Sex Roles, Life Styles, and Childbearing. New York: Free Press.

Scanzoni, J.H.
1976 Gender role and the process of fertility control. Journal of Marriage and the Family, 38:677-691.

Scanzoni, J.H. and M. McMurry
1972 Continuities in the explanations of fertility control. Journal of Marriage and the Family, 34:315-22.

Scanzoni, J.H. and M. Szinovacz
1980 Family Decision-Making: A Developmental Sex Role Model. Sage Library of Social Research, no. 111.

Schultz, T.W.
1973 The value of children: an economic perspective. Journal of Political Economy, 81(2):S2-13.

Schultz, T.W.(ed.)
1974 Economics of the Family: Marriage, Children, and Human Capital. Chicago: University of Chicago Press, 584 p.

Sly, D.F.
1970 Minority group status and fertility: an extension of Goldscheider and Uhlenberg. American Journal of Sociology, 76:443-459.

Sonquist, John A.
1970 Multivariate Model Building: The Validation of a Search Strategy. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan.

Stokes, C.S. and C.J. Dudley
1972 Family planning and conjugal roles:some further evidence. Social Science Medicine, 6:157-161.

Suter, Larry E., L.J. Waite and R.M. Stolzenberg
1976 Birth expectations and working plans of young women: changes in role choices. Paper presented at the P.A.A meetings.

Thornton, Arland
1978 The relationship between fertility and income, relative income, and subjective well-being, pp. 261-290. In Julian L. Simon (ed.), Research in Population Economics, Vol 1. Connecticut: Jai Press, Inc.

Thornton, Arland
1979 Fertility and income, consumption aspirations, and child quality standards. Demography, 16:157-175.

Tobin, P.L.
1976 Conjugal role definitions, value of children, and contraceptive practice. The Sociological Quarterly, 17:314-322.

Tremblay, V. and Guy Trudel
1984 Canadian Fertility Survey: Methodological Report. Montreal: Universite de Montreal. 167 p.

Trovato, F.
1981 Canadian ethnic fertility. Sociological Focus, 14:57-74.

Trovato, F. and T.K. Burch
1980 Minority group status and fertility in Canada. Canadian Ethnic Studies 12:1-18.

Trovato, F. and C.F. Grindstaff
1980 Decomposing the urban-rural fertility differential, Canada, 1971. Rural Sociology, 45(3):448-468.

Trovato, F. and S.S. Halli
1983 Regional differences in family size: the case of the Atlantic provinces in Canada. Rural Sociology, 48(2):271-290.

Turchi, Boone A.
1975a Microeconomic theories of fertility: a critique. Social Forces 54(Sept):107-125.

Turchi, Boone A.
1975b The Demand for Children in the U.S. Ballinger Press.

Turchi, Boone A.
1979 Comments on fertility as consumption: theories from the behavirol sciences. Journal of Consumer Research, 5:293-6.

Turner, J. and A.B. Simmons
1977 Sex roles and fertility: which influences which? Canadian Studies in Population 4:43-60.

United Nations
1983 Relationship Between Fertility and Education: A Comparative Analysis of World Fertility Survey Data for Twenty-Two Developing Countries. New York.

Vance, Rupert B.
1952 Is theory for demographers? Social Forces 31(1):9-13.

Veevers, J.E.
1983 Demographic Aspects of Vital Statistics: Fertility. Ottawa: Statistics Canada, Catalogue No. 84-X-501E.

Westoff, C.F.
1962 The Family Growth in Metropolitan America study: a progress report, pp. 185-191. In C.V. Kiser.

Westoff, C.F.
1975 The yield of the imperfect:the 1970 national fertility study. Demography, 12(4):573-80.

Westoff, C.F., R.G. Potter., P.C. Sagi., and E.G. Mishler
1961 Family Growth in Metropolitan America. Princeton: Princeton University Press. 433 p.

Westoff, C.F., R.G. Potter., and P.C. Sagi
1963 The Third Child: A Study of Prediction in Fertility. Princeton: Princeton University Press. 292 p.

Westoff, L.A. and C.F. Westoff
1971 From Now to Zero-Fertility, Contraception, and Abortion in America. Little, Brown and Co., Boston, 358 p.

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

Willis, Robert J.
1973 A new approach to the economic theory of fertility behaviour. Journal of Political Economy, Vol. 81(2) Part II:14-64.

APPENDIX A

a. COMPUTATION OF FERTILITY PLANNING (FPLAN)

```
RECODE Q511,Q521,Q531,Q541,Q551,Q561,C7.1,C8.1,C9.1,C10.1,
       C11.1,C12.1 (1,2=1)(3=2)/Q515,Q525,Q535,Q545,Q555,
       Q565,C7.5,C8.5,C9.5,C10.5,C11.5,C12.5 (1=1)(2,3=2)

DO REPEAT X1 = Q511,Q521,Q531,Q541,Q551,Q561,C7.1,C8.1,C9.1,
               C10.1,C11.1,C12.1/
          X2 = Q515,Q525,Q535,Q545,Q555,Q565,C7.5,C8.5,C9.5,
               C10.5,C11.5,C12.5/
          X3 = F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12
IF (X1 EQ 1 AND X2 EQ 1) X3 = 1
IF (X1 EQ 2 AND X2 EQ 1) X3 = 1
IF (X1 EQ 1 AND X2 EQ 2) X3 = 0
IF (X1 EQ 2 AND X2 EQ 2) X3 = 0
IF (X1 EQ 9 AND Q506 EQ 1) X3 = 1
END REPEAT
COMPUTE FP = SUM(F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12)
COMPUTE FPLAN = FP/Q411
RECODE FPLAN(LO THRU .00=1)(.10 THRU .91=2)(1=3)(MISS=4)
Where,
      1 = No planning, 2 = Some planning
      3 = Perfect planning
```

b. COMPUTATION OF GENDER ROLE EGALITARIANISM(GRE)

```
RECODE SHARCOOK, HOUSWORK, CCLOTHES, CHLDCARE, SCHLWORK
       (1,2,4=0)(3=1)/DECISION(1,3,4=0)(2=1)
COMPUTE GRE = SUM(SHARCOOK,HOUSWORK,CCLOTHES,CHLDCARE,
                  SCHLWORK,DECISION)
RECODE GRE (1,2=1)(3,4=2)(5,6=3)
Where,
      1 = No egalitarian, 2 = Low egalitarian
      3 = Medium egalitarian
```

c. COMPUTATION OF COST-BENEFIT (COSTBENFIT)

```
RECODE DISTANCE, BURDEN, OPCOST, GOAL, AFFECTION,
       HAPPINESS (1,2=0)(3,4=1)
COMPUTE COST = SUM(DISTANCE,BURDEN,OPCOST)
COMPUTE BENEFIT = SUM(GOAL,AFFECTION,HAPPINESS)
COMPUTE COSTBENFIT = COST-BENEFIT
Where,
       1 = Low, 2 = Medium, 3 = High
```

APPENDIX _

The Pearson correlation coefficients of variables considered for the causal model.

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
AFERT	1.0000	.8168	-.1158	-.0994	-.2859	-.2474	-.1320	.0512	-.0089	.0269	.0275
	(3674)	(3659)	(3674)	(3674)	(3674)	(3674)	(3670)	(3658)	(3625)	(3673)	(3639)
	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .001	P= .296	P= .051	P= .048
EXFERT	.8168	1.0000	-.0799	-.0553	-.2002	-.1495	-.0903	.0446	-.0186	.0198	.0114
	(3659)	(3659)	(3659)	(3659)	(3658)	(3658)	(3654)	(3644)	(3611)	(3658)	(3625)
	P= .000	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .004	P= .132	P= .115	P= .246
SHARCOOK	-.1158	-.0799	1.0000	.4862	.2546	.2123	.1403	-.0598	-.0345	-.0362	-.0707
	(3674)	(3659)	(3681)	(3681)	(3680)	(3680)	(3676)	(3665)	(3631)	(3679)	(3645)
	P= .000	P= .000	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .019	P= .014	P= .000
HOUSWORK	-.0994	-.0553	.4862	1.0000	.3164	.2456	.2202	-.1100	-.0724	-.0747	-.0743
	(3674)	(3659)	(3681)	(3681)	(3680)	(3680)	(3676)	(3665)	(3631)	(3679)	(3645)
	P= .000	P= .000	P= .000	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000
CHLDCARE	-.2859	-.2002	.2546	.3164	1.0000	.4975	.4025	-.0719	-.0822	-.0678	-.0997
	(3674)	(3658)	(3680)	(3680)	(3680)	(3680)	(3676)	(3664)	(3631)	(3678)	(3644)
	P= .000	P= .000	P= .000	P= .000	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000
CCLOTHES	-.2474	-.1495	.2123	.2456	.4975	1.0000	.3824	.0254	-.0512	-.0437	-.0523
	(3674)	(3658)	(3680)	(3680)	(3680)	(3680)	(3676)	(3664)	(3631)	(3678)	(3644)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .	P= .000	P= .062	P= .001	P= .004	P= .001
SCHLWORK	-.1320	-.0903	.1403	.2202	.4025	.3824	1.0000	.0095	-.0205	-.0423	-.0738
	(3670)	(3654)	(3676)	(3676)	(3676)	(3676)	(3676)	(3660)	(3627)	(3674)	(3641)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .	P= .282	P= .108	P= .005	P= .000
DECISION	.0512	.0446	-.0598	-.1100	-.0719	.0254	.0095	1.0000	.0535	.0027	-.0004
	(3658)	(3644)	(3665)	(3665)	(3664)	(3664)	(3660)	(3665)	(3617)	(3664)	(3631)
	P= .001	P= .004	P= .000	P= .000	P= .000	P= .062	P= .282	P= .	P= .001	P= .434	P= .491
DISTANCE	-.0089	-.0186	-.0345	-.0724	-.0822	-.0512	-.0205	.0535	1.0000	.0702	.0405
	(3625)	(3611)	(3631)	(3631)	(3631)	(3631)	(3627)	(3617)	(3631)	(3631)	(3603)
	P= .296	P= .132	P= .019	P= .000	P= .000	P= .001	P= .108	P= .001	P= .	P= .000	P= .008
BURDEN	.0269	.0198	-.0362	-.0747	-.0678	-.0437	-.0423	.0027	.0702	1.0000	.0671
	(3673)	(3658)	(3679)	(3679)	(3678)	(3678)	(3674)	(3664)	(3631)	(3679)	(3644)
	P= .051	P= .115	P= .014	P= .000	P= .000	P= .004	P= .005	P= .434	P= .000	P= .	P= .000
OPCOST	.0275	.0114	-.0707	-.0743	-.0997	-.0523	-.0738	-.0004	.0405	.0671	1.0000
	(3639)	(3625)	(3645)	(3645)	(3644)	(3644)	(3641)	(3631)	(3603)	(3644)	(3645)
	P= .048	P= .246	P= .000	P= .000	P= .000	P= .001	P= .000	P= .491	P= .008	P= .000	P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
GOAL	.1402 (3649) P= .000	.1546 (3634) P= .000	-.0676 (3655) P= .000	-.0627 (3655) P= .000	-.0781 (3655) P= .000	-.0594 (3655) P= .000	-.0421 (3651) P= .006	.0048 (3641) P= .386	-.0817 (3616) P= .000	.1097 (3655) P= .000	-.0186 (3624) P= .132
AFFECTIN	.0819 (3632) P= .000	.0935 (3617) P= .000	-.0348 (3638) P= .018	-.0380 (3638) P= .011	-.0440 (3637) P= .004	-.0576 (3637) P= .000	-.0330 (3633) P= .023	.0178 (3624) P= .142	-.1715 (3599) P= .000	.1563 (3638) P= .000	.0138 (3616) P= .204
HAPPINES	.2059 (3663) P= .000	.2379 (3648) P= .000	-.0857 (3670) P= .000	-.0725 (3670) P= .000	-.1259 (3669) P= .000	-.1141 (3669) P= .000	-.0572 (3665) P= .000	.0266 (3654) P= .054	-.0636 (3620) P= .000	.0172 (3668) P= .150	.0015 (3637) P= .465
FPLAN	-.1369 (3383) P= .000	-.0914 (3375) P= .000	.0046 (3389) P= .395	.0475 (3389) P= .003	.1314 (3389) P= .000	.1115 (3389) P= .000	.1084 (3386) P= .000	-.0084 (3378) P= .313	-.1003 (3351) P= .000	-.0450 (3388) P= .004	-.0552 (3357) P= .001
INTERVAL	-.4226 (3203) P= .000	-.2693 (3192) P= .000	.0447 (3209) P= .006	.0504 (3209) P= .002	.1610 (3209) P= .000	.1207 (3209) P= .000	.1080 (3205) P= .000	-.0429 (3194) P= .008	.0101 (3171) P= .285	.0069 (3208) P= .348	-.0233 (3177) P= .095
DURMAR	.1246 (3397) P= .000	.0727 (3384) P= .000	-.1337 (3403) P= .000	-.1777 (3403) P= .000	-.33[illegible] (340[illegible]) P= [illegible]	-.[illegible]80 ([illegible]02) P= .000	-.2961 (3399) P= .000	.0283 (3388) P= .050	.0178 (3357) P= .151	.0440 (3401) P= .005	.0448 (3368) P= .005
WEDUC	-.2532 (3674) P= .000	-.1617 (3658) P= .000	.1304 (3680) P= .000	.1963 (3680) P= .000	.19[illegible] (3679[illegible]) P= .000	[illegible] ([illegible]) P= .000	.1223 (3675) P= .000	-.0472 (3664) P= .002	.0263 (3630) P= .057	.0601 (3678) P= .000	.0294 (3644) P= .038
HEDUC	-.1739 (3607) P= .000	-.1144 (3591) P= .000	.0516 (3614) P= .001	.1184 (3614) P= .000	.1444 (3613) P= .000	.0609 (3613) P= .000	.2097 (3609) P= .000	.0131 (3604) P= .216	.0435 (3567) P= .005	.0539 (3612) P= .001	.0429 (3583) P= .005
HINCOME	-.0323 (2891) P= .041	-.0559 (2882) P= .001	-.0951 (2895) P= .000	-.0737 (2895) P= .000	-.0713 (2894) P= .000	-.1524 (2894) P= .000	-.0284 (2891) P= .063	.0427 (2892) P= .011	.0514 (2858) P= .003	.0462 (2895) P= .006	.0581 (2873) P= .001
FINCOME	-.1615 (2878) P= .000	-.1280 (2869) P= .000	.0316 (2881) P= .045	.0906 (2881) P= .000	.0339 (2881) P= .034	-.0523 (2881) P= .002	.0171 (2878) P= .180	.0368 (2875) P= .024	.0503 (2849) P= .004	.0444 (2881) P= .009	.0012 (2858) P= .474
HR	.0211 (2802) P= .132	-.0004 (2794) P= .492	-.0470 (2807) P= .006	-.0537 (2807) P= .002	-.0219 (2806) P= .123	-.0804 (2806) P= .000	-.0277 (2803) P= .072	.0138 (2803) P= .232	-.0078 (2772) P= .341	.0161 (2807) P= .197	.0076 (2785) P= .344

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
HOCCU	-.1193	-.0903	-.0090	.0217	.0135	-.0250	.0988	.0342	.0407	.0215	.0297
	(3577)	(3562)	(3584)	(3584)	(3583)	(3583)	(3579)	(3579)	(3535)	(3582)	(3548)
	P= .000	P= .000	P= .296	P= .097	P= .210	P= .067	P= .000	P= .020	P= .008	P= .099	P= .039
STDLIVNG	.0430	.0182	-.0243	-.0240	-.0523	-.0411	-.0299	-.0216	.0304	.0460	.0096
	(3646)	(3632)	(3652)	(3652)	(3652)	(3652)	(3649)	(3647)	(3607)	(3651)	(3621)
	P= .005	P= .136	P= .071	P= .074	P= .001	P= .007	P= .035	P= .096	P= .034	P= .003	P= .281
SAVING	-.1374	-.1095	-.0050	.0416	.0571	-.0023	.0480	-.0346	-.0614	-.0037	-.0124
	(3546)	(3532)	(3553)	(3553)	(3552)	(3552)	(3549)	(3538)	(3509)	(3551)	(3527)
	P= .000	P= .000	P= .384	P= .007	P= .000	P= .446	P= .002	P= .020	P= .000	P= .414	P= .231
FSUCCESS	-.0452	-.0110	-.0398	.0031	.0138	-.0238	.0044	.0202	-.0596	-.0557	-.0001
	(3668)	(3652)	(3674)	(3674)	(3673)	(3673)	(3669)	(3659)	(3628)	(3672)	(3640)
	P= .003	P= .253	P= .008	P= .426	P= .201	P= .074	P= .395	P= .111	P= .000	P= .000	P= .498
FNCLPLAN	-.0837	-.0566	.0179	.0816	.0980	.0729	.0809	-.0162	-.0720	-.0015	.0211
	(3671)	(3656)	(3677)	(3677)	(3676)	(3676)	(3673)	(3663)	(3630)	(3676)	(3643)
	P= .000	P= .000	P= .139	P= .000	P= .000	P= .000	P= .000	P= .164	P= .000	P= .464	P= .102
INTERUPT	.2177	.1524	-.1620	-.1811	-.1535	-.0898	-.0784	.0322	.0135	.0057	.1121
	(3674)	(3659)	(3681)	(3681)	(3680)	(3680)	(3676)	(3665)	(3631)	(3679)	(3645)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .026	P= .209	P= .365	P= .000

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	GOAL	AFFECTIN	HAPPINES	FPLAN	INTERVAL	DURMAR	WEDUC	HEDUC	HINCOME	FINCOME	HR
GOAL	1.0000 (3655) P= .	.4187 (3623) P= .000	.3193 (3644) P= .000	.0433 (3368) P= .006	-.0214 (3189) P= .113	-.0534 (3380) P= .001	-.1699 (3655) P= .000	-.1296 (3588) P= .000	-.0867 (2881) P= .000	-.1291 (2867) P= .000	-.0303 (2794) P= .054
AFFECTIN	.4187 (3623) P= .000	1.0000 (3638) P= .	.1951 (3627) P= .000	.0564 (3352) P= .001	-.0242 (3170) P= .086	-.0668 (3362) P= .000	-.1350 (3637) P= .000	-.0764 (3573) P= .000	-.0728 (2867) P= .000	-.1020 (2856) P= .000	-.0191 (2781) P= .157
HAPPINES	.3193 (3644) P= .000	.1951 (3627) P= .000	1.0000 (3670) P= .	.0216 (3380) P= .105	-.0666 (3201) P= .000	.0581 (3392) P= .000	-.1448 (3669) P= .000	-.0872 (3603) P= .000	-.0375 (2888) P= .022	-.0805 (2874) P= .000	-.0145 (2801) P= .222
FPLAN	.0433 (3368) P= .006	.0564 (3352) P= .001	.0216 (3380) P= .105	1.0000 (3389) P= .	.1984 (3021) P= .000	-.1495 (3134) P= .000	.1067 (3388) P= .000	.0748 (3328) P= .000	.0146 (2683) P= .225	-.0013 (2669) P= .474	.0018 (2603) P= .464
INTERVAL	-.0214 (3189) P= .113	-.0242 (3170) P= .086	-.0666 (3201) P= .000	.1984 (3021) P= .000	1.0000 (3209) P= .	-.0370 (3209) P= .018	.2627 (3208) P= .000	.2052 (3155) P= .000	.0783 (2536) P= .000	.1376 (2514) P= .000	.0268 (2475) P= .092
DURMAR	-.0534 (3380) P= .001	-.0668 (3362) P= .000	.0581 (3392) P= .000	-.1495 (3134) P= .000	-.0370 (3209) P= .018	1.0000 (3403) P= .	-.2770 (3402) P= .000	-.1845 (3346) P= .000	.1947 (2689) P= .000	.1337 (2668) P= .000	.0203 (2620) P= .150
WEDUC	-.1699 (3655) P= .000	-.1350 (3637) P= .000	-.1448 (3669) P= .000	.1067 (3388) P= .000	.2627 (3208) P= .000	-.2770 (3402) P= .000	1.0000 (3680) P= .	.5796 (3614) P= .000	.2232 (2894) P= .000	.3441 (2880) P= .000	.0616 (2807) P= .001
HEDUC	-.1296 (3588) P= .000	-.0764 (3573) P= .000	-.0872 (3603) P= .000	.0748 (3328) P= .000	.2052 (3155) P= .000	-.1845 (3346) P= .000	.5796 (3614) P= .000	1.0000 (3614) P= .	.3412 (2869) P= .000	.3467 (2851) P= .000	.0115 (2807) P= .272
HINCOME	-.0867 (2881) P= .000	-.0728 (2867) P= .000	-.0375 (2888) P= .022	.0146 (2683) P= .225	.0783 (2536) P= .000	.1947 (2689) P= .000	.2232 (2894) P= .000	.3412 (2869) P= .000	1.0000 (2895) P= .	.7682 (2807) P= .000	.7109 (2807) P= .000
FINCOME	-.1291 (2867) P= .000	-.1020 (2856) P= .000	-.0805 (2874) P= .000	-.0013 (2669) P= .474	.1376 (2514) P= .000	.1337 (2668) P= .000	.3441 (2880) P= .000	.3467 (2851) P= .000	.7682 (2807) P= .000	1.0000 (2881) P= .	.5114 (2725) P= .000
HR	-.0303 (2794) P= .054	-.0191 (2781) P= .157	-.0145 (2801) P= .222	.0018 (2603) P= .464	.0268 (2475) P= .092	.0203 (2620) P= .150	.0616 (2807) P= .001	.0115 (2807) P= .272	.7109 (2807) P= .000	.5114 (2725) P= .000	1.0000 (2807) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	GOAL	AFFECTIN	HAPPINES	FPLAN	INTERVAL	DURMAR	WEDUC	HEDUC	HINCOME	FINCOME	HR
HOCCU	-.1007	-.0608	-.0434	.0525	.1489	.0428	.3772	.5752	.3981	.3591	-.0060
	(3559)	(3541)	(3573)	(3302)	(3139)	(3326)	(3583)	(3529)	(2834)	(2819)	(2807)
	P= .000	P= .000	P= .005	P= .001	P= .000	P= .007	P= .000	P= .000	P= .000	P= .000	P= .376
STDLIVNG	.0092	.0072	-.0034	-.0236	-.0352	.0411	.0129	-.0323	-.1351	-.1478	-.1334
	(3632)	(3613)	(3641)	(3366)	(3183)	(3376)	(3652)	(3592)	(2884)	(2867)	(2797)
	P= .289	P= .333	P= .418	P= .086	P= .023	P= .008	P= .217	P= .026	P= .000	P= .000	P= .000
SAVING	-.0318	.0141	-.0113	.0816	.0928	.0040	.1276	.1620	.2134	.2055	.1127
	(3527)	(3517)	(3544)	(3272)	(3095)	(3280)	(3553)	(3495)	(2825)	(2813)	(2741)
	P= .029	P= .202	P= .251	P= .000	P= .000	P= .409	P= .000	P= .000	P= .000	P= .000	P= .000
FSUCCESS	.0228	.0365	.0500	.0845	.0452	.0217	.0444	.0871	.2232	.2156	.1575
	(3650)	(3634)	(3663)	(3384)	(3204)	(3397)	(3673)	(3607)	(2890)	(2876)	(2802)
	P= .084	P= .014	P= .001	P= .000	P= .005	P= .103	P= .004	P= .000	P= .000	P= .000	P= .000
FNCLPLAN	-.0019	.0271	.0173	.0755	.0546	-.0859	.1045	.1126	.0849	.0864	.0611
	(3654)	(3637)	(3666)	(3386)	(3206)	(3400)	(3676)	(3610)	(2893)	(2880)	(2805)
	P= .453	P= .051	P= .147	P= .000	P= .001	P= .000	P= .000	P= .000	P= .000	P= .000	P= .001
INTERUPT	.0501	.0189	.0936	-.0042	-.1104	.1275	-.1675	-.0764	.0353	-.2300	.0429
	(3655)	(3638)	(3670)	(3389)	(3209)	(3403)	(3680)	(3614)	(2895)	(2881)	(2807)
	P= .001	P= .127	P= .000	P= .404	P= .000	P= .000	P= .000	P= .000	P= .029	P= .000	P= .012

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	HOCCU	STDLIVNG	SAVING	FSUCCESS	FNCLPLAN	INTERUPT
HOCCU	1.0000 (3584) P= .	-.0434 (3567) P= .005	.1579 (3461) P= .000	.1246 (3578) P= .000	.0779 (3580) P= .000	.0008 (3584) P= .480
STDLIVNG	-.0434 (3567) P= .005	1.0000 (3652) P= .	-.1444 (3527) P= .000	-.2875 (3647) P= .000	-.1259 (3650) P= .000	.0308 (3652) P= .031
SAVING	.1579 (3461) P= .000	-.1444 (3527) P= .000	1.0000 (3553) P= .	.2404 (3547) P= .000	.2046 (3549) P= .000	-.0475 (3553) P= .002
FSUCCESS	.1246 (3578) P= .000	-.2875 (3647) P= .000	.2404 (3547) P= .000	1.0000 (3674) P= .	.1605 (3672) P= .000	.0011 (3674) P= .474
FNCLPLAN	.0779 (3580) P= .000	-.1259 (3650) P= .000	.2046 (3549) P= .000	.1605 (3672) P= .000	1.0000 (3677) P= .	-.0256 (3677) P= .061
INTERUPT	.0008 (3584) P= .480	.0308 (3652) P= .031	-.0475 (3553) P= .002	.0011 (3674) P= .474	[illegible] ([illegible] P= [illegible]	1.0000 (3681) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED .

APPENDIX C

Estimation procedure

The system of equations for the proposed model of Figure 7.2 include structural and measurement model equations.

The structural equations are:

$$\eta = B\eta + \Gamma\xi + \zeta$$

$$\begin{bmatrix} \text{FERTILITY} \\ \text{INTERVAL} \\ \text{FPLAN} \\ \text{BENEFIT} \\ \text{COST} \\ \text{GRE} \end{bmatrix} = \begin{bmatrix} 0 & \beta_1 & \beta_2 & 0 & 0 & 0 \\ 0 & 0 & \beta_3 & \beta_4 & \beta_5 & \beta_6 \\ 0 & 0 & 0 & \beta_7 & \beta_8 & \beta_9 \\ 0 & 0 & 0 & 0 & 0 & \beta_{10} \\ 0 & 0 & 0 & 0 & 0 & \beta_{11} \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \end{bmatrix} + \begin{bmatrix} \gamma_1 & 0 & 0 & 0 & \gamma_2 \\ \gamma_3 & 0 & 0 & 0 & \gamma_4 \\ \gamma_5 & 0 & 0 & 0 & 0 \\ \gamma_6 & \gamma_7 & \gamma_8 & \gamma_9 & \gamma_{10} \\ \gamma_{11} & \gamma_{12} & \gamma_{13} & \gamma_{14} & \gamma_{15} \\ \gamma_{16} & \gamma_{17} & \gamma_{18} & \gamma_{19} & \gamma_{20} \end{bmatrix} \begin{bmatrix} \text{WEDUC} \\ \text{ECOSTATUS} \\ \text{COMMITMENT} \\ \text{RESIDENCE} \\ \text{DURMAR} \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \\ \zeta_4 \\ \zeta_5 \\ \zeta_6 \end{bmatrix}$$

The measurement equations are:

$$Y = \Lambda y\ \eta + \epsilon$$

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ Y_5 \\ Y_6 \\ Y_7 \\ Y_8 \\ Y_9 \\ Y_{10} \\ Y_{11} \\ Y_{12} \\ Y_{13} \\ Y_{14} \\ Y_{15} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & \lambda_1 & 0 & 0 \\ 0 & 0 & 0 & \lambda_2 & 0 & 0 \\ 0 & 0 & 0 & 0 & \lambda_3 & 0 \\ 0 & 0 & 0 & 0 & \lambda_4 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & \lambda_5 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & \lambda_6 \\ 0 & 0 & 0 & 0 & 0 & \lambda_7 \\ 0 & 0 & 0 & 0 & 0 & \lambda_8 \\ 0 & 0 & 0 & 0 & 0 & \lambda_9 \end{bmatrix} \begin{bmatrix} \text{FERTILITY} \\ \text{INTERVAL} \\ \text{FPLAN} \\ \text{BENEFIT} \\ \text{COST} \\ \text{GRE} \end{bmatrix} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \epsilon_3 \\ \epsilon_4 \\ \epsilon_5 \\ \epsilon_6 \\ \epsilon_7 \\ \epsilon_8 \\ \epsilon_9 \\ \epsilon_{10} \\ \epsilon_{11} \\ \epsilon_{12} \\ \epsilon_{13} \\ \epsilon_{14} \\ \epsilon_{15} \end{bmatrix}$$

an

$$X = \Lambda x\ \xi + \delta$$

$$\begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ X_5 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \text{WEDUC} \\ \text{ECOSTATUS} \\ \text{COMMITMENT} \\ \text{RESIDENCE} \\ \text{DURMAR} \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \end{bmatrix}$$

The lambda(λ) coefficients are fixed at 1.0 in order to facilitate the interpretations by keeping the concepts to have same units of measurement as the indicators. The error variance for the exogenous (δ) and endogenous (ϵ) variables are estimated by substracting reliability coefficients from 1 and multiplying by the variance of the respective indicators in order to get the portion of true and error variance components of the total variance of the indicators. The covariance matrix for the exogenous concepts (ϕ) and error variances for the endogenous concepts (ψ) are left free for the LISREL program to estimate.

The LISREL program finds maximum likelihood parameter estimates by minimizing the following function:

$$F = \log|\Sigma| + tr(S\Sigma')-\log |S|-(p+q)$$

Where Σ is the covariance matrix among all the observed indicators that is implied by our estimated model,

S is the actual observed covariance among the indicators,

p and q are indicators of exogenous and endogenous variables respectively.

The goodness of fit of the model is assessed by likelihood ratio χ^2 test. The null hypothesis is tested against the most general hypothesis the Σ is unconstrained. The probability level of χ^2 is the probability of obtaining a χ^2 value larger than the value actually obtained given that the model is correct. The degrees of freedom for χ^2 is

$$df = 1/2K(K+1)-t,$$

Where K is the number of variables analyzed and t is the total number of parameters estimated. The degrees of freedom is important to assess the fit of the model, since the χ^2 measure is senstive to sample size. The goodness of fit index (GFI), on the other hand, is independent of sample size and relatively robust against departures from normality and therefore useful to assess the fit of the model in general.

APPENDIX C

DEFINITION OF SYMBOLS IN THE EQUATIONS

ξ_1 = Educational status(WEDUC)
X_1 = Wife's completed years of education

ξ_2 = Economic status (ECOSTATUS)
X_2 = Husband's current annual income

ξ_3 = Work commitment(COMMITMENT)
X_3 = Number of work interruptions

ξ_4 = Residence (RESIDENCE)
X_4 = Residential status in youth

ξ_5 = Marriage duration (DURMAR)
Y_8 = Marital duration in years

η_1 = Fertility(FERTILITY)
Y_1 = Number of live births adjusted for age

η_2 = Rate of childbearing(INTERVAL)
Y_2 = First birth interval in years

η_3 = Fertility planning(FPLAN)
Y_3 = Use of contraceptives in planning pregnancies

η_4 = Subjective benefit of children(BENEFIT)
Y_4, Y_5, Y_6 = Having a child provides goal/affection/happiness in life (Strongly disagree=1 ... Strongly agree=4)

η_5 = Subjective cost of children(COST)
Y_7, Y_8 = Children distance the spouses (DISTANCE)/children means heavy responsibility (BURDEN)(Strongly disagree=1 ... strongly agree=4)
Y_9 = Children reduce work opportunity outside home (OPCOST)(Not at all=1 ... A lot=4)

η_6 = Gender role egalitarianism(GRE)
Y_{10}, Y_{11}, Y_{12} = Who does the cooking (SHARCOOK)/housework(HOUSWORK)/taking care of

children(CHLDCARE)/shopping for children's cloth(CCLOTHES)/ supervision of children's school work(SCHLWORK)? (Always you=1 ... mostly partner=4)
Y_{15} = Who makes the financial decision? (Mainly women=1 ... always partner=4)

λs (lambda) = structural coefficients relating unobserved or theoretical variables to observed variables

ϕs (phi) = covariance among the exogenous theoretical variables

γs (gamma) = structural coefficients relating exogenous, theoretical variables (ξs) to the endogenous variables (ηs)

βs (Beta) = structural coefficients relating the endogenous theoretical variables

δs and ϵs (delta and epsilon) = measurement errors in observed variables, X and Y, respectively

ζs (zeta) = errors of prediction.

APPENDIX D

SECTION 1 - RESPONDENT'S BACKGROUND

→ Exact time now: _____

0 2 (1-9)

100. To start with, we need some background information. Do you currently live in a city, a small town or on a farm?

City, town 1
Small town 2
Farm 3

(10-13)

(14)

101. What municipality do you live in?

_____
(name of municipality)

102. Have you always lived in this municipality?

Yes . . . . . 1 → GO TO 109
No 2

(15)

103. How many years have you lived there?

_____
(number of years)

(16-17)

104. Were you born in : _____ ?
(Respondent's province)

Yes . . . . . 1 → GO TO 109
No 2

(18)

105. Were you born in Canada?

Yes 1

(19)

106. In what province?

_____
(province)

GO TO 109

No 2

107. In which country were you born?

_____
(country)

(20-21)

108. In what year did you arrive in Canada?

19____

(22-26)

109. Was your father born in Canada?

Yes 1
No 2
Don't know. 8

☐ (27)

110. Was your mother born in Canada?

Yes 1
No 2
Don't know. 8

☐ (28)

111. Up to about age 12, did you live mostly in a rural area, in a small town or in a big city?

Rural area. 1
Small town. 2
Big city. 3
Don't know. 8

☐ (29)

112. In total how many years of education did you complete?

_____ (SPECIFY) If 11 years of education or less → GO TO 115

☐☐ (30-31)

113. What is the highest degree, certificate, diploma or grade you have obtained?

_____ (SPECIFY)

☐☐ (32-33)

114. How many years of education had you completed by the time you first started to work (or when you finished regular studying, if you have never worked)?

_____

☐☐ (34-35)

115. Including yourself how many children did your mother have and which one were you, the oldest, the second oldest,...?

A) _____ (number of children) → B) _____ (order)

☐☐ (36-39)

116. To what ethnic or cultural group did you or your male ancestor belong on first coming to North America?

French	01	Ukrainian	07
English	02	Dutch	08
Irish	03	Polish	09
Scottish	04	Jewish	10
German	05	Chinese	11
Italian	06	Greek	12

Other: _____
(SPECIFY)

☐☐ (40-41)

117. What is your present religion?

Roman Catholic	01	Jewish	09
Protestant (no specification)	02	Ukrainian Catholic	10
United Church	03	Pentecostal	11
Anglican	04	Jehovah's Witnesses	12
Presbyterian	05	Mennonite	13
Lutheran	06	Salvation Army	14
Baptist	07	Islam	15
Greek Orthodox	08	No religion	95

Other: _____
(SPECIFY)

☐☐ (42-43)

118. How often do you attend religious services? Would you say...

... every week	1
... every month	2
... a few times a year	3
... rarely, or	4
... never	5

☐ (44)

119. What language do you speak most often at home?

English 01
French. 02
German. 03
Italian 04
Ukrainian 05
Other: _____ (SPECIFY)

(45-46)

120. What is the language you first learned in childhood and still understand?

English 01
French. 02
German. 03
Italian 04
Ukrainian 05
Other: _____ (SPECIFY)

(47-48)

SECTION 2 - OPINIONS AND ATTITUDES ON THE FAMILY

201. In your opinion, when a man and woman decide to live together, is it very important, important, not very important or not at all important for them to get married?

Very important	1
Important	2
Not very important	3
Not at all important	4

☐ (49)

202. In general, would you say you more or less agree or disagree with the following statement: "Marriage is a permanent union which should only be broken for very serious reasons"?

Agree	1
Disagree	2

☐ (50)

203. When two people decide to get married, is it absolutely necessary, fairly necessary or not necessary that ...

	Absolutely necessary	Fairly necessary	Not necessary	
a) ...they love each other strongly . .	1	2	3	☐ (51)
b)....there is a strong sexual attraction between them . . .	1	2	3	☐ (52)
c) ...they want to have children	1	2	3	☐ (53)
d) ...they feel the same way about wanting or not wanting to have children. . .	1	2	3	☐ (54)
e) ...they intend to stay married for the rest of their lives . .	1	2	3	☐ (55)
f) ...the couple has the financial means to support itself . .	1	2	3	☐ (56)
g) ...they have a similar social background.	1	2	3	☐ (57)

204. In order for a couple to live together for a long time, would you say that it is very important, important, not very important or not at all important that ...

	Very important	Important	Not very important	Not at all important	
a) ... the strong love at the beginning endure forever	1	2	3	4	☐ (58)
b) ... the strong love at the beginning turn at least into deep affection	1	2	3	4	☐ (59)
c) ... their sexual life be satisfactory	1	2	3	4	☐ (60)
d) ... both be faithful to the other	1	2	3	4	☐ (61)

205. Do you find that it is acceptable or not acceptable for a man and woman to decide to live together without marriage ...

	Acceptable	Not acceptable	
a) ... if they want to make sure that their future marriage will last	1	2	☐ (62)
b) ... if they are attracted to one another but do not want to make any long term commitments	1	2	☐ (63)

206 ... opinion, is it acceptable for young women to have a ...ife before getting married?

Yes 1
No . . . . . 2 ☐ (64)

...ng men?

...es 1
... . 2 ☐ (65)

Université de Montréal
Centre de sondage

National Library of Canada
Canadian Theses Service
Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Service des thèses canadiennes

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

UNIVERSITY OF ALBERTA

DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELLING APPROACH

by

JOHN JAYACHANDRAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

IN

DEMOGRAPHY

DEPARTMENT OF SOCIOLOGY

EDMONTON, ALBERTA

SPRING 1990

National Library of Canada
Bibliothèque nationale du Canada

Canadian Theses Service
Service des thèses c. .diennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

ISBN 0-315-60201-5

NL-339 (r. 88/04) c

Canada

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR JOHN JAYACHANDRAN

TITLE OF THESIS DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELLING APPROACH

DEGREE FOR WHICH THESIS WAS PRESENTED DOCTOR OF PHILOSOPHY

YEAR THIS DEGREE GRANTED SPRING 1990

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(SIGNED) .....

PERMANENT ADDRESS:

ANJUKULIPATTY (PO)

WEMBARPATTY (VIA)

DINDIGUL (TK). TAMIL NADU. INDIA

DATED April 18 1990

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the FACULTY OF GRADUATE STUDIES AND RESEARCH, for acceptance, a thesis entitled DETERMINANTS OF FERTILITY IN CANADA: A CAUSAL MODELING APPROACH submitted by JOHN JAYACHANDRAN in partial fulfilment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

.....

Supervisor

.....

.....

.....

.....

.....

.....

External Examiner

APR 1 1 1990

Date.....

DEDICATION

This thesis is dedicated to the memory of my father,

JOHN NALLAKAMAN

ABSTRACT

The major objectives of this thesis have been to identify crucial determinants of fertility and to develop a causal model of these determinants for women in Canada.

A critical review of theoretical and empirical models on fertility were carried out. Subsequently, four areas were selected to fulfill the objectives of the thesis: structural/background factors, economic factors, sociopsychological factors, and biological factors.

The data for the analysis were taken from the Canadian Fertility Survey, 1984. Techniques such as multiple classification analysis, multiple regression analysis, and regression decomposition analysis were employed to identify fertility determinants, and the LISREL computer programme was used to develop the causal model.

Analysis of structural factors revealed that fertility differentials by these factors have narrowed, particularly for ethnicity and religion. However, when ethnicity was combined with religion the fertility differentials were substantial for the British and the French. Eastern Europeans and "other" ethnic groups had smaller family size in relation to the two charter groups. Nativity and residence in youth were significantly related to fertility.

Economic analysis of fertility included both objective and subjective economic measures. Wife's education, income and commitment to work showed expected relationship and explained a substantial variation in fertility. Measures

such as couple's standard of living, their financial plan for future and their financial success contributed very little for fertility explanation.

Sociopsychological process within the family were assessed by gender role egalitarianism and the subjective value of children. Couples in joint-role relationships had fewer children than their counterparts. While the subjective benefit of children was positively related to fertility, the evidence was less than conclusive for subjective cost of children.

The causal model hypothesized that fertility is a direct function of biological variables and an indirect function of sociopsychological and economic variables. The hypothesis held true only for the sociopsychological variables. The variables used in the model explained a significant portion of variance in regional fertility differentials but less so for ethnicity and religion.

Studies which focus on couples as the unit of analysis, valid measures for sociopsychological processes within the family, and other methods of analysis are recommended as directions for future research.

ACKNOWLEDGEMENTS

This thesis could not have been completed without the help of a number of people. I would like to thank the members of my committee for their valuable assistance. Prof. Karol Krotki who served as the supervisor was very supportive and encouraging throughout the thesis work. I am particularly thankful to Prof. Krotki for permitting me to use the Canadian Fertility Survey data. Professors Mike Gillespie, N. M. Lalu, and Frank Trovato provided academic guidence at various stages of the thesis. I would also like to thank Prof. T. S. Veeman and Dr. A. Romaniuc who served as my external committee member and external examiner respectively for their critical assessment of my thesis and the valuable comments they made.

I owe special thanks to Chuck Humphrey for providing computer consultation. Thanks must also go to Linda Abbot and Denise Joseph for allocating computer funds when required. Kerri Calvert was also extremely helpful in locating library resources.

I am also grateful to fellow students and staff of the Sociology Department for their support and friendship over the years. Finally, this thesis would not have been completed without the wonderful love, support and encouragement from my spouse and counselor Dalbir.

Table of Contents

Chapter — Page

DEDICATION iv

ABSTRACT v

ACKNOWLEDGEMENTS vii

1. INTRODUCTION 1

Statement of the Problem 1

Approaches to Study the Determinants of Fertility 3

1.2.1 Economic Approach 3

1.2.2 Sociological Approach 9

1.2.3 Psychological Approach 12

1.3 Trends in Canadian Fertility 16

1.4 Rationale and Scope of the Thesis 19

1.5 Outline of the Thesis 21

2. REVIEW OF LITERATURE 23

2.1 American Literature 23

2.2 Canadian Literature 27

3. DATA AND METHODOLOGY 32

3.1 Variables and their Measurement 38

3.2 Method of Analysis 44

4. STRUCTURAL FACTORS AND FERTILITY 48

4.1 Bivariate Analysis of Structural Factors 58

4.2 Multivariate Analysis of Structural Factors 61

4.3 Regression Decomposition Analysis 72

5. ECONOMIC DETERMINANTS OF FERTILITY 82

5.1 Conceptualization of Economic Variables 89

5.2 Bivariate Analysis of Economic Variables 94

5.3 Multivariate Analysis of Economic Variables 104

6. SOCIOPSYCHOLOGICAL AND BIOLOGICAL DETERMINANTS OF FERTILITY 114

6.1 Formulation of Sociopsychological Concepts 120

6.2 Bivariate Analysis of Sociopsychological Factors 123

6.3 Multivariate Analysis of Sociopsychological Variables 130

6.4 Biological Determinants and Fertility 149

6.4.1 Bivariate Analysis of Biological Factors .152

6.4.2 Multivariate Analysis of Biological Factors 154

7. A CAUSAL MODEL FOR THE DETERMINANTS OF FERTILITY ...161

7.1 Theoretical Framework 162

7.1.1 Socioeconomic Determinants 162

7.1.2 Social Psychological Processes 163

7.2 The Causal Model 165

7.2.1 Selection of Variables 166

7.2.1.1 Socioeconomic Determinants 167

7.2.1.2 Social Psychological Processes ...169

7.2.1.3 Proximate determinants 170

7.3 Method of Analysis 171

7.4 Findings 174

7.4.1 Endogenous Variables 175

7.4.2 Exogenous Variables 183

7.5 Discussion and Conclusion 188

7.6 Analysis of subgroups 191

7.6.1 Ethnic Differences 191

7.6.2 Religious Differences 201

7.6.3 Regional Differences 208

8. Summary and Conclusions 216

8.1 Summary of the Thesis 216

8.2 Broader Relevance of the Thesis 236

8.3 Suggestions for Future Research 238

BIBLIOGRAPHY 240

APPENDIX A 259

APPENDIX B 260

APPENDIX C 266

APPENDIX D 270

List of Tables

Table		Page
1.1	Crude birth, total fertility, and gross reproduction rates	18
3.1	Comparison of distribution on selected variables between the 1984 survey and 1981 census	36
3.2	Unadjusted deviations of current and expected family size by respondent's age	40
4.1	Current family size(net age) by structural factors. Unadjusted and adjusted deviations by marriage duration	59
4.2	Current family size(net age) by structural factors. Unadjusted and adjusted for deviations by independent variables and marriage duration.	62
4.3	Means and standard deviations for study variables by religion and ethnicity	67
4.4	Multiple regression analysis of current family size by ethnicity and religion	69
4.5	Regression decomposition of current family size(net age) by ethnicity and religion	73
5.1	Pearson correlation coefficients for economic variables	95
5.2	Unadjusted and adjusted deviations for current family size (net age) by economic variables	98
5.3	Unadjusted and adjusted deviations for expected family size (net age) by economic variables	102
5.4	Unadjusted and adjusted deviations for current family size (net age) by economic variables within levels of standard of living.	106
6.1	Pearson correlation coefficients for sociopsychological variables.	124
6.2	Unadjusted and adjusted deviations for current family size (net age) by sociopsychological variables.	128

Table Page

6.3 Unadjusted and adjusted deviations for current family size within levels of relative occupational status of wife by gender role egalitarianism 132

6.4 Unadjusted and adjusted deviations for current family size within couples labor force status by gender role egalitarianism. 136

6.5 Unadjusted and adjusted deviations for current family size within wife's labor force participation by value of children 145

6.6 Pearson correlation coefficients for biological and other independent variables 153

6.7 Unadjusted and adjusted deviations for current family size within duration of marriage by other independent variables. 156

7.1 Indirect and total effects of endogenous and exogenous variables for the model in fig 7.2 176

7.2 Standardized coefficients, correlation of etas and explained variance 180

7.3 Disturbance terms, error variances and covariances 182

7.4 Means and standard deviations for study variables by marriage duration and ethnicity. 192

7.5 Multiple regression analysis of current family size by ethnicity and marriage duration 195

7.6 Regression decomposition of current family size (net age) by ethnicity 197

7.7 Means and standard deviations for study variables by marriage duration and religion 202

7.8 Multiple regression analysis of current family size by religion and marriage duration 204

7.9 Regression decomposition of current family size (net age) by religion 205

Table | Page

7.10 Means and standard deviations for study variables by marriage duration and region 210

7.11 Mutiple regression analysis of current family size by region and marriage duration 211

7.12 Regression decomposition of current family size (net age) by region 213

List of Figures

Figure		Page
7.1	Proposed causal model for the determinants of fertility	172
7.2	Causal model for the determinants of fertility in Canada, 1984	177

Chapter 1

INTRODUCTION

1.1 Statement of the Problem

Human fertility is an outcome of interplay between various socioeconomic, psychological, and biological factors. Understanding of human fertility behaviour, therefore, requires knowledge of the contribution of these factors pertaining to fertility decision-making processes. Although environmental factors play a role in such decisions, it is the couple that ultimately decides when and how many children to have under given conditions.

The complex nature of causation in fertility behaviour has motivated scholars from several disciplines to develop a comprehensive theoretical framework with the inclusion of all relevant variables (Davis and Blake, 1956; Freedman, 1962; Bulatao and Lee, 1983). Theories from economics, sociology, and demography typically stress the constraining role of environment. Psychological theories begin with people's needs, motives or other mental events to model the primary antecedents of fertility (Bagozzi and Van Loo, 1978). Some psychological theories are concerned with the decision process itself or the rules governing it (eg. Fishbein, 1972; Hass, 1974). Among anthropological approaches, several discuss fertility determinants at the societal or cultural level with no references to couples making decisions, while others focus specifically on these

decisions (Bartlett, 1980; Hull, 1983). Despite the amount of work that has gone into developing an adequate 'theory of fertility' there is not yet a single theory that can be described as such (Westoff et al., 1961; Farooq and Simmons, 1985; Bulatao and Lee, 1983). Under these circumstances, it would be of greater scientific and policy interest to examine the relationship between variables and fertility decision-making processes simultaneously through causal models.

Researchers in Canada studying fertility focus mainly on fertility in relation to variables such as region, residence, ethnicity, religion and other structural factors. Some of these factors are becoming less important in explaining fertility differentials (Lapierre-Adamcyk in Veevers, 1983). Nevertheless, there is a growing need to understand how various socioeconomic, psychological, and biological variables are causally linked to fertility. One such attempt is made by Balakrishnan et al.(1979) to study the explanatory power of background variables on fertility. Unfortunately, there are not many studies available in modelling the determinants of fertility in Canada. This could be, to some extent, due to a lack of quality survey data necessary to obtain estimates of intermediate variables. The objectives of this thesis, therefore, are to examine the relevance of various socioeconomic, psychological and biological factors in fertility explanations, and to develop a causal model to understand

how these factors influence fertility. In doing this, no attempt will be made to test any particular framework suggested by previous researchers. Instead, knowledge gained from these frameworks will be used in formulating the causal model. Analysis of this kind will provide better understanding of the dynamics of fertility in Canada.

1.2 Approaches to Study the Determinants of Fertility

1.2.1 Economic Approach

The notion that economic factors play a central role in fertility decisions and consequent fertility behaviour is hardly new. The transition theory, which summarizes the historical experience of some Western countries, suggests that fertility is an outcome of economic rather than biological process. This notion has been considered a longstanding one by Notestein (1945), and Davis (1950). Couples control fertility through various measures (delay of marriage, coitus interruptus and contraception) and view many children as an economic burden and a barrier to material and social advancement. Leibenstein (1957) complains that it is not possible to deduce from this sort of theory the set or sets of conditions necessary and sufficient to achieve secular fertility decline. He then proceeds to lay the groundwork for what has become known as the 'economic theory' of fertility. Leibenstein suggests that motivations with respect to family size are, to a large

extent, rational: "parents will want an extra child if the satisfactions to be derived from that child are greater than the 'costs' that are involved - where costs are to be interpreted rather broadly" (p.159). Leibenstein distinguishes between three types of utility to be derived from an additional child and two types of cost. The types of utility are 1) the utility to be derived from the child as 'consumption good', namely, as a source of personal pleasure to the parents; 2) the utility to be derived from the child as a productive agent, that is, the child's possible future contribution to family income; and 3) the utility to be derived from the prospective child as a potential source of security, either in old age or otherwise. The costs are twofold: direct costs in terms of current expenditures and indirect costs or opportunities foregone.

Although several variations of the economic theory can be seen in the literature, the basic core of the theory remains Leibenstein's. The important landmarks of development of this approach in past years have been papers by Becker (1960), Mincer (1962,1963), Easterlin (1969; 1975) and later papers by Leibenstein himself (1974;1975;1981).

Becker (1960) adopts Leibenstein's theory but diverges very little from it. Becker proposes an application of the economic theory of consumer behaviour to fertility. His work provids the basis for the 'new home economics' approach to fertility. Becker views children as an economic good and the demand for children as a family decision process whereby

households choose a family size that maximizes satisfaction, given the prices of commodities, tastes, and total income. In other words, the quantity of children demanded is a function of the prices of goods and services consumed and the level of income.

Mincer (1962,1963) has two important additions to the neoclassical model of fertility. First, he demonstrates that permanent, not current family income influences fertility decisions. He suggests that couples make family size decisions based on long term anticipation of wealth. Second, he argues that the prices faced by a couple in raising a child consist not only of market goods and services, but also of the opportunity costs for the wife (e.g., an increase in potential earnings), which tend to influence fertility positively by making more children affordable. This is known as 'income effect'. On the other hand, a rise in opportunity costs also tends to influence fertility negatively through its impact on the price of children (e.g. as the potential earnings of the wife rise, the costs of her time also increase). This is characterized as price or substitution effect.

The economic theory of fertility has been further developed in several respects. Lancaster (1965) integrates the economic theory of fertility into the new consumer theory. According to this theory it is not the children but 'child services' that provide utility to parents. Child services consist of at least two elements: the number of

children and the quality of children, an increase in both number and quality being able to raise utility, but at the same time numbers and qualities being more or less substitutable (Willis, 1973).

Schultz (1974) develops the theory further into an economic theory of the family, sometimes called a theory of household production and consumption. According to this theory, families behave in a rationally calculating way,that is, by optimizing the results attainable with the available resources. The resources of the family are the incomes of the individual family members, the accumulated wealth of the family, the time budgets of the family members. The outputs are the basic commodities consumed by family members as well as other satisfactions. This means that the families use their available time budget, the time of wife and husband, in order to produce monetary incomes (by engaging in earning activities), to produce goods in the household and to produce different kinds of family amenities, among others, children.

Other important improvements in the economic theory of fertility include work by Leibenstein (1974,1975), Easterlin (1969,1975), and Turchi (1975). Leibenstein's theory (1975) posits three determinants of fertility, which include, in addition to income, the status of the household and the economic environment in which the household finds itself (e.g., stages of economic development). In other words, his approach includes the effect of 'social influence groups'

(SIG's). According to him, family units fall into particular 'groups' defined by historical, socio-cultural and economic factors. The SIG into which they fall has an effect upon desired living standards, consumption patterns and family size. Thus, moving from one SIG to another may lower desired fertility, but increasing income within a given SIG may actually increase fertility.

Easterlin (1969,1975) suggests a 'synthesis approach' in an effort to integrate economic theories of fertility with those proposed by scholars outside of economics. His contributions are noteworthy. First, he stresses that "it is the potential income flow through time that is pertinent to household decision-making" (Easterlin, 1969, pp. 128-130). Secondly, he argues that tastes, rather than being ignored, as they are in the traditional microeconomic model, should be explicitly included as determinant of fertility. He suggests that background characteristics (e.g. religion, education, residence, family type and the like) operate through the variables of tastes for children and for other goods and services. Easterlin's final contribution is the idea that every family unit has a 'modal' expected income, given its members' income, education, age, and the like. Income in excess of this tends to result in higher fertility but may also alter tastes for other goods and decrease relatively the demand for children. Thus, Easterlin suggests that 'tastes' are a function of income, i.e. one's norm can change as one changes income groups. In his later work, on

the 'economic framework for fertility analysis', Easterlin (1978) has also argued for adding a third set of fertility determinants. According to him the determinants of fertility are seen as working through one or more of the following: 1) the demand for children--the number of surviving children parents would want if fertility regulations were costless; 2) the potential output of children --the number of surviving children parents would have if they did not deliberately limit fertility; and 3) the costs of fertility regulation--including both subjective (psychic) costs and objective costs (the time and money required to learn about and use specific techniques).

Turchi (1975b) develops a similar approach and argues that the reference group (socioeconomic) structures one's view of the cost of children. According to this framework, the major determinant of the level of fertility is the cost of parental time because "the largest single input into the child rearing process is parents' time" (Turchi, 1975b:75). Therefore, as the price of parental time increases, so does the cost of child rearing and other home production. A rise in the price of time leads parents to engage more in market activities and less in non-market home production activities (Willis, 1973; Ben-porath, 1973; Schultz, 1973). Income affects demand for children in a negative way across reference groups but in a positive way within reference groups. Espenshade (1972) makes a similar suggestion.

Namboodiri (1972) suggests a different approach for fertility analysis. According to him it is debatable whether or not fertility is a onetime decision made at marriage or at the beginning of child-bearing. He argues for a more sequential approach in which each parity birth is a function of a host of economic factors, but also of the outcomes of all past fertility decisions.

1.2.2 Sociological Approach

In their study of determinants of fertility, sociologists tend to focus on the constraining aspects of norms and the influence of group pressure. Major contributions to the development of a sociological theory of fertility include work by Davis and Blake (1956), Davis (1959), Freedman (1962) and others.

The Davis-Blake (1956) schema presents a framework for understanding the ways in which biological processes, social group factors and individual behaviour interact to produce an observed level of fertility. This schema has served as a starting point for the derivation and testing of various specific hypotheses by later researchers. They provide very useful classification of 'intermediate variables' that stand between social organization and social norms on the one hand and fertility on the other. These include variables such as intercourse, conception, and gestation. Bongaarts (1978) has attempted to provide estimates for this model.

Freedman (1962) suggests a somewhat more complex framework and argues that the Davis-Blake variables 'intermediate' between socially established 'norms' regulating fertility and the actual fertility outcome. His framework includes stratification variables such as occupation, income, and education, family structure variables, technological factors, non-family institutions and other characteristics of social and economic organizations. According to him social norms are assumed to play a dominant role in fertility decisions. Blake (1968) provides further support for this view. She argues that "economic issues are secondary to normative ones" (p. 16). For Blake, it is the social context of reproduction that determines fertility. Differences in family size between rich and poor, Catholic and non-Catholic, and other groups are attributed to basic dissimilarities in normative pressures. Other sociologists holding similar opinions are Ryder (1973), and Goldberg (1975).

Caldwell (1976, 1978) proposes a 'general theory' of fertility that is essentially sociological in nature. His fundamental thesis is that "fertility behaviour in both pre-transitional and post-transitional societies is economically rational within the context of socially determined economic goals and within bounds largely set by biological and psychological factors" (1978, p.553).

The normative approaches discussed so far are micro in orientation since they examine the constraining aspects of

the larger social structure on individuals and groups. Role theory discussed in sociological literatures, on the other hand, takes the pattern of relationships among people in groups as the unit of analysis (Jackson,1972).

Family is the most important unit of analysis in fertility research for role theorists. Scanzoni (1975,1976) is one of the few researchers to study the impact of marital structure on fertility by looking at the joint role of husband and wife as a unit of analysis. He assumes that gender differentiation is a distributive system of costs and benefits. More specifically, he assumes that the structure of norms within the marriage makes the husband and wife assume task responsibilities (e.g., those dealing with housework, child care, and career) in return for individual and mutual gain in the form of economic, social and psychic rewards (Holter, 1970). The more modern and equal the relationship between husband and wife, the lower the desired and intended family size. According to Bagozzi and Van Loo (1978) "the outcome of any particular relationship in terms of family size, consumption of goods and services, marital satisfaction, and so on will depend on the unique interaction and exchanges that occur between husband and wife" (p. 220). They conclude that the normative structure of relationships within the family is the central determinant of family size.

1.2.3 Psychological Approach

Psychology is a science of behaviour with a focus on individual level processes and is therefore relevant to fertility, which is a result of individual behaviour. Some scholars are skeptical about the use of psychological variables and measures in fertility analysis. As one author expresses it, "significant relationships between psychological factors and fertility simply have not been found" and "perhaps such relationships do not exist" (Mauldin, 1965, p. 9). Evidence from the Indianapolis study (Kiser and Whelpton, 1958), the GAF study (Whelpton, Campbell, and Patterson, 1966) and the Princeton studies (Bumpass and Westoff, 1970) tends to support this skepticism.

However, Namboodiri (1972) argues that psychological factors 'mediate' between the structural factors and the fertility outcome. He admits that factors other than psychological characteristics may well be present in the causal nexus of fertility behaviour but goes on to suggest that many of these affect fertility through the psychological characteristics of individuals. Therefore, he insists, complete understanding of fertility behavior will be impossible unless and until the psychological variables involved are identified.

Fishbein (1972) proposes perhaps the simplest psychological theory of fertility. He argues that fertility is determined by intentions. An individual's intention to

perform a given behavior will be a function of one's attitude toward performing that behaviour and one's normative beliefs with respect to what others expect, weighted by the motivation to comply with those expectations. He further stresses that all other factors, including economic ones, affect fertility behavior through these attitudes and intentions.

Hoffman (1973) introduces the concept of 'value of children' in analyzing fertility behaviour. The 'value' of children in her scheme refers to a hypothetical net worth of children, with positive values (satisfactions) balanced against negative values (costs). She uses values and disvalues in the same way as benefits and costs.

Bagozzi and Van Loo (1980) suggest a social exchange theory for fertility analysis. This theory takes husband-and-wife exchange as the unit of analysis. The theory claims that fertility is an outcome of two broad social-psychological processes within the family unit. In the first the shared, socially constructed attitudes or tastes of household members influence family size. In the second, the social exchanges transpiring between husband and wife affect fertility. Social exchange is manifested within the family through power, conflict, decision-making and social influence. Social and economic variables are viewed as constraints on attitudes and the husband-wife interaction.

In sum, the economic theories persume that individuals think and behave in a rational, calculating way, comparing the necessary costs and the expected outcomes of their actions, uninfluenced by any exogenous considerations. The actual decision-making process itself is not explicitly modeled, but, rather, the household is assumed to maximize utility subject to time and budget constraints. Sociological theories, on the other hand, tend to emphasize the fact that individuals are governed in their actions and even in their beliefs and opinions by values and norms embedded in the culture of the surrounding society. Psychological theories begin with needs, motives, and other mental events of people and then model these as the primary antecedents of fertility.

The various approaches discussed so far include economic, social and psychological factors as major determinants of fertility. Biological factors, although not explicitly modeled, are considered to be proximate to the determinants of fertility. These factors may control fecundity or potential or actual output of children but are inevitably governed by sociocultural processes such as mating patterns, age at marriage, and numerous taboos, customs and social usages. Although fertility is a biological fact, social factors are a significant determinants of biological results. In other words, this 'supply contrained' phase can not be considered as a theory of fertility in its own right. The use of the term 'natural

fertility' remains mainly an analytic construct, not a theory or even an explanatory paradigm (Robinson and Harbison, 1980).

Despite the complexity and the magnitude of the work that has gone into developing an adequate theory of fertility, there is little consensus on a single theory that dominates all others. There is no unified body of explanatory factors that can be called a theory of fertility. Westoff et al.(1961) in reference to fertility theory write: "It soon became apparent, however, that there existed no single sociological or psychological theory that would encompass all the factors relevant to fertility. First and perhaps most significant is the fact that research into the social and psychological factors affecting fertility is still at a stage where the primary needs are for gaining more information.... Secondly, the level of fertility is a complex result of many events. The antecedents to these events can be approached from the perspective of several sciences" (p. 137). This opinion holds true to a considerable extent even today. Among both economists and social scientists there is a feeling that present theories do not capture, even in a heuristic manner, the most important elements in the process that determines fertility at either the household or societal level (Farooq and Simmons, 1985). Bulatao and Lee (1983) hold similar views with regard to the use of any particular framework in explaining fertility differentials. They suggest that it

would be of much greater scientific interest to concentrate on unravelling the specific relationships or linkages between variables and fertility decision-making processes. For example, one might explain a greater portion of variance in fertility by means of a variable like education, but if one does not know what education really means in this context and how it works on fertility, the gain in understanding may be negligible. In addition, models or explanatory systems are needed to address simultaneously various determinants and their interrelationships (Bulatao and Lee, 1983).

Therefore, in this thesis an attempt will be made to develop a causal model to study the determinants of fertility based on knowledge gained from various frameworks. The method used to test the causal model will overcome some of the problems faced by other researchers.

1.3 Trends in Canadian Fertility

In Canada, of the three basic components of population growth, fertility has been the most important component of population change in the past and is likely to be even more so in the future, as mortality stabilizes and immigration stabilizes or decreases. For example, from 1851 (when the population was approximately 2.4 million) to 1981 (25.5 million), roughly 11.1 million people immigrated to Canada and 7.5 million emigrated, for a net gain of roughly 3.6 million. During this same period there were about 31.5

million births and 13.8 million deaths, for a natural increase of approximately 17.7 million. Thus, fertility has been an important factor in the growth of the Canadian population.

Table 1.1 shows the historical trends in fertility for Canada. Fertility in Canada has been declining for more than a century, as has been the case in the United states and other developed countries. Canada's crude birth rate declined steadily from 1851 (50 per thousand) until the middle of the Great Depression in 1937 (20 per thousand). A similar trend emerges when we look into total and general fertility rates during this period. This decline is attributed to industrial and economic change in Canada (Balakrishnan et al., 1979). It is also noted that the drop in legitimate fertility as an important factor for this decline followed by variations in nuptiality and age structure (Henripin, 1972). In the 1940's and 1950's, Canada experienced the 'baby boom', which was marked by an increase in the birth rate to 28 per 1,000. This increase is related to changes in the age at marriage, economic upturn, and shorter birth intervals (Peterson, 1969). Increase in nuptiality accounts for three quarters of the rise in fertility observed between 1941 and 1951 (Henripin, 1972). The recent decline in Canada's crude birth rate began in 1957 with a sharp decline in 1959 (George and Romaniuk, 1971). Some have termed this drop as a 'baby bust' (Grindstaff, 1975) while others have interpreted it as

Table 1.1 Crude Birth, Total Fertility, and Gross Reproduction Rates

YEAR	CBR	TFR	GRR
1921	29.3	3,536	1.712
1926	24.7	3,357	1.628
1931	23.2	3,200	1.555
1936	20.3	2,696	1.310
1941	22.4	2,832	1.377
1946	27.2	3,374	1.640
1951	27.2	3,503	1.701
1956	28.0	3,858	1.874
1961	26.1	3,840	1.868
1966	19.4	2,813	1.369
1971	16.8	2,187	1.060
1976	15.7	1,825	.887
1981	15.3	1,704	.829
1982	15.1	1,694	.825
1983	15.0	1,680	.816
1984	15.0	1,686	.819
1985	14.8	1,669	.811

Source:

Statistics Canada, Vital statistics, 1974, vol.1 Ottawa:1976.
Statistics Canada, Vital statistics, Births and deaths. Cat. 84-204, Annual.

meaning that Canada is on the road to zero population growth (Kayani and Krishnan, 1973). By the year 1974 the crude birth rate reached an all-time low of 15 per 1,000. The factors associated with this large decline in birth rates are increasing age at marriage, economic difficulties, more effective contraception, abortion, and the changing role of women in all areas of Canadian society (Balakrishnan, et al., 1979). The factors associated with the current baby bust are identified by Romaniuk (1984). He notes, "Fewer people are marrying and those who marry do so later in life, and divorce more frequently than in the past. Unintended births have been considerably reduced as a result of availability of and the willingness to use, the highly effective modern contraceptive procedures and therapeutic abortion" (p. 114).

1.4 Rationale and Scope of the Thesis

Fertility in most of the developed countries is at an all-time low. Although it is true that the fertility levels of these countries have been 'low' since the 1920s, many have experienced further sharp declines over the past two decades. Such a decline will have important effects on many aspects of their social, cultural, and economic life. The trends, changes, determinants and consequences of fertility affect nearly all the institutional and organizational systems of a country. Fertility decisions, having macro level consequences, however, are made at an individual

level. In North America completed family size for most couples is the result of a conscious decision to control fertility.

In order to understand couples' fertility behaviour, one needs to know the constraints involved in making fertility decisions. As mentioned earlier, many scholars have developed different approaches to the study of this phenomenon. But, given the complex nature of human behaviour there is no single unified approach available for this purpose. Therefore, there is a need for a multidisciplinary approach to explain couples' fertility behaviour. In this thesis an attempt is made to develop and test a causal model based on information obtained from various disciplines.

In Canada, fertility has been an important component of population change for more than a century. Many researchers have studied the role of fertility in Canadian population growth. However, Canadian demographers have relied on census and vital statistics for their analysis instead of using fertility survey data. Even if fertility survey data are available, they are limited to certain areas or sub-populations of Canada (for e.g. Balakrishnan, et al., 1975; Carisse, 1964; Elahi, 1973; Henripin and Lapierre-Adamcyk, 1974; Krishnan and Krotki, 1976; Pool, 1975). The Canadian Fertility Survey (Balakrishnan et al., 1984) conducted in 1984 is the first survey of its kind. It covers a wide range of topics that allows researchers to test various hypotheses. Data from this survey are used in

this thesis to identify the determinants of fertility and to develop a causal model.

The major objectives of this thesis are twofold. First, it will examine the factors involved in fertility decision-making suggested by economic, sociopsychological, and biological frameworks as well as by the more traditional structural mode of analysis. Secondly, it will attempt to develop a causal model by integrating the knowledge gained from various approaches to studying the determinants of fertility in Canada. The rich Canadian Fertility Survey data used here permit the testing of various hypotheses explaining fertility behavior. Moreover, the computer programme (LISREL) used to test the causal model is highly flexible and allows the building of a model which is closer to the real world.

1.5 Outline of the Thesis

Chapter 2 deals with the review of empirical literature on the determinants of fertility in North America pertinent to the problem under study. In chapter 3, the research design of the Canadian Fertility Survey is discussed. This chapter also includes the operationalization of the concepts and techniques used in the data analysis. Chapter 4 examines the relationship between background factors and fertility as in the traditional structural mode of analysis. Chapters 5 and 6 examine the explanatory powe of economic, sociopsychological and biological frameworks with regard to

fertility differentials. Chapter 7 develops a causal model based on knowledge gained from a synthesis of different approaches to studying the relationship between fertility and other variables. Chapter 8 provides a summary of the thesis with conclusions, implications and suggestions for future research.

Chapter 2

REVIEW OF LITERATURE

Since the time fertility was first identified as an important component of population growth, interest in this area has grown rapidly in different parts of the world. To review the vast empirical literature on the determinants of fertility is beyond the scope of this thesis. In order to do this one would need an annotated bibliography such as Freedman's (1961,1975) or a work similar to Hawthorn's (1970). The intent here is to review the literature, derived from North American experience, that is relevant to the problem under study.

2.1 American Literature

More information is available on the fertility of the American population than on that of any other nation (Freedman, 1962). Most of this information has been obtained from a series of national surveys. Therefore, it seems appropriate to review briefly the findings relevant to the present study.

The first fertility study was conducted in Indianapolis in 1941. Data for the study were obtained from an adjusted sample of 1,444 'relatively fecund' couples with the following characteristics: husband and wife native white, both Protestant, both having finished at least the eighth grade, married during 1927-29, neither previously married, husband under 40 and wife under 30 at marriage, and both

residents of a large city most of the time since marriage (Kiser and Whelpton, 1953,1958).

The major objective of the study was to try to test twenty-three hypotheses concerning the relation of fertility planning and size of planned family to given social and psychological factors. Some of these findings are relevant to the present study. With regard to socioeconomic status it was found that 1) the higher the socio-economic status, the higher the proportion of couples practising contraception effectively and the larger the planned families; 2) the higher the feeling of economic insecurity, the smaller the planned families; 3) the stronger the liking for children, the higher the fertility among couples planning their fertility; and 4) the stronger the feeling that children restrict personal freedom, the lower the proportion of couples practising contraception effectively and the larger the planned family (Kiser and Whelpton, 1953; 1958).

The Princeton study was conducted in two phases. The first interview was conducted in 1959 and was based on a probability sample of 1,165 wives (Westoff, et al., 1961), and the second interview in 1960 included 905 wives (Westoff, et al., 1963). The sample taken for this study consisted of native-white couples, resident in large standard metropolitan areas, who had recently had a second birth and whose marital history had been uncomplicated by divorce, permanent separation by death or extensive pregnancy wastage. One of the major purposes of this study

was to investigate the factors determining whether or not the couple would have a third child. The reason for this focus was the fact that much of the higher fertility of the postwar period had resulted from the desire for more than two children. The major findings of this study are the following: 1) on the average Jewish couples practice more efficient contraception than do Protestants or Catholics; 2) the average length of the first two birth intervals has proved to be the strongest predictor of family size; 3) religious preference is the strongest of all major social characteristics in its influence on fertility. Catholic couples want the most and Jewish couples the fewest children, with Protestants in an intermediate position; and 4) fertility is negatively associated with the socioeconomic status of Protestants and positively related to the socioeconomic status of Catholics. Thus, as Westoff (1962) notes, it is useful to treat the religious groups separately in fertility analysis.

The Detroit studies of 1955 and 1958 emphasized the underlying differences in family activities that might provide the basis for differences in fertility associated with economic differences in the past. In contrast to the Princeton study this one included young married women (17-32) of all parities. The dependent variable was the expected number of children. The relevant findings of the Detroit studies are as follows: 1) for couples with small families (0-1 child), the variable with the greatest

association (.351) with the number of children wanted is the home-centered leisure of the wife; 2) for couples with three or more children, income (.105) and education (.194) show positive association with the expected number of children; and 3) for couples with small families, income (-.151) and education (.046) show opposite effects with the expected number of children (Goldberg, 1958). The major contribution of the Detroit study lies in integrating family size preferences and expectations within the framework of an analysis of family roles rather than focusing only on traditional sturctural differentials.

In contrast to the analytical studies discussed above, the Growth of American Families studies (GAF) focus mainly on describing the distribution of certain fertility variables for the United States as a whole, demonstrating how they differ for certain important subgroups of the population, and tracing their changes over time. The GAF studies of 1955 and 1960 were the first nationwide studies of factors affecting the control of fertility in the United States.

The first Growth of American Families study (GAFI, 1955) included a sample of married white women aged 18-39 living with their husbands present or temporarily absent due to military service (Freedman, et al., 1959). In the second Growth of American Family study (GAFII) the sample included non-whites. The findings from GAF relevant to this study are the following: 1) religion was closely related to

fertility of white wives; 2) educational attainment has no significant influence on fertility, but showed stronger association in the ability to control fertility; and 3) the wife's work experience was inversely related to fertility (Whelpton et.al, 1966).

The National Fertility studies of 1965 and 1970 covered the whole nation. The sample size (5,617) was larger and the sampling criteria less restrictive than those of the earlier studies (Ryder and Westoff, 1971). The results from these surveys are summarized by Westoff (1975): 1) the age at marriage showed strong negative association with wanted and unwanted fertility, holding the duration of marriage constant; 2) a strong negative association existed between education and both wanted and unwanted fertility; 3) the 1970 NFS data provided no support for the hypothesis that income has a positive relation with fertility; and 4) "The hypothesis of competition between child-bearing and non-familial roles is supported by the finding that sex-role traditionlism is positively correlated with wanted fertility, (among whites only, however)" (p. 578).

2.2 Canadian Literature

Canadian fertility patterns, trends and differentials have been well documented. The existing data on fertility have been explored to a greater extent (Veevers, 1983). Because of the lack of quality fertility survey data, Canadian demographers have relied heavily on census and

vital statistics reports for their analyses of fertility patterns. The public user sample data from Canadian census have enabled fertility analysts to study fertility in the context of families and households, to examine the socioeconomic and lifestyle correlates of child bearing and to examine cohort shifts is fertility determinants (Balakrishnan, et al., 1979; Lapirre-Adamcyk, 1979). Many studies have focused on French-English differences in fertility (Beaujot, 1978; Henripin, 1972; Henripin and Legare, 1971; Legare, 1974). Fewer have emphasized the fertility of native people (Romaniuk, 1981; Romaniuk and Piche, 1972), regional differences in fertility (Balakrishnan et al., 1979; Henripin, 1972 ; Kalbach and McVey, 1979; Trovato and Halli, 1983), urban-rural fertility differentials (Lapierre-Adamcyk, 1979; Trovato and Grindstaff, 1980), other ethnic differences in fertility (Beaujot, 1975; Beaujot et al., 1978,1982), and the relationship between sex roles and fertility (Turner and Simmons, 1977). In contrast to the United States, only three regional (Balakrishnan et al., 1975; Henripin and Lapierre-Adamcyk, 1974; Krishnan and Krotki, 1976) and one national (Balakrishnan et al., 1985) fertility surveys have been conducted in Canada. A small scale survey in an eastern city (Elahi, 1973) also includes fertility related materials.

The Toronto fertility survey was designed to study the attitudes and behavior of married women in Metropolitan

Toronto concerning the past and prospective growth of their families (Balakrishnan, et al., 1975). The basic information was collected in January-March 1968 through interviews with 1,632 wives in their reproductive years and living with their husbands in metropolitan Toronto. The sample represented 81 percent of the eligible selected households. A multiple classification analysis of nine socioeconomic and demographic variables was conducted. The following findings are relevant to the present study: 1) Catholics have higher actual and expected fertility than Protestants; 2) the educational attainment of the wife has no clear inverse relationship to fertility; 3) income does not have any association with fertility; 4) the wife's labor force participation is the strongest predictor of current family size even when controlled for all other factors; 5) foreign-born women have lower fertility than native-born women; and 6) contraceptive use does not vary much by age or duration of marriage, indicating that in developed societies where high levels of contraceptive use exist, motivational differences may be expressed in the type of method used, rather than in use or non-use.

The Quebec fertility study was conducted in the province of Quebec in the summer and autumn of 1971. The sample consisted of 1,600 ever married women aged 15-65 (Henripin, 1972). The mean expected family size decreased by 24 percent between 1931 to 1951; and each generation of French married women expected more children than their

English counterparts.

The Growth of Alberta Families study (GAFS) was conducted in Edmonton, Alberta from 19 November 1973 to 15 February 1974. A total of 1,045 interviews were completed among women aged 18 to 54 with no specification regarding marital status (Krishnan and Krotki, 1976). The aim of the study was, among other things, to determine family size norms, contraceptive usage and failures, and the extent of unwanted pregnancies in different income groups and social categories. The particular focus of the Edmonton study was ethnic differentials in fertility behaviours and attitudes. It was found that ethnic groups differed widely in current and expected fertility. The Esterlin-Becker hypothesis of a positive correlation between income and fertility received slight support from the Irish respondents in Edmonton.

The other findings from GAFS relevant to the present study can be obtained from the work of Beaujot (1975) and McDaniel (1978). Beaujot (1975), using GAFS data, studied the differential fertility of social groups in Edmonton. He found that: 1) education, occupation and income had inverse relations with current family size on the total of all ethnic groups; 2) the level of living had a U-shaped relation to fertility with lowest fertility at intermediate levels of living; 3) items reflecting an emphasis on the childbearing role, as contrasted with the work role, were found to be positively related to fertility; 4) direct costs of children, measured as the extent of intended

post-secondary support, were negatively related to fertility; and 5) opportunity cost or index of indirect costs, measured by the implied work years lost, did not show the expected negative relationship.

McDaniel's study (1978), based on GAFS data, further examined the family size expectations in Edmonton. Some of her findings are same as those of Beaujot (1975); therefore, the focus here will be on findings not discussed earlier but relevant to the present thesis: 1) no clear relationship emerged between relative income position and fertility; 2) low feelings of financial success were related to higher fertility aspiration; 3) ownership of high status items (consumer durables) was negatively related to fertility expectations; 4) implied work years lost through childbearing were found to have a direct relationship with expected family size; 5) egalitarian attitudes were negatively related to anticipated family size; 6) direct relationships were found between fertility preferences and mother role orientation, and 7) in general, sociological variables were found to be far less important than economic considerations in explaining variation in family size preferences.

Chapter 3

DATA AND METHODOLOGY

The data for this thesis come from the Canadian Fertility Survey (CFS), which was conducted from April to June of 1984. The target population was women of all marital statuses in their reproductive years of 18-49, who were accessible by means of a residential telephone number and able to converse over the phone in either French or English. The survey was carried out using centralized telephone interviews, with a random sampling of the population chosen according to a two-stage probability selection process. The first stage involved the selection of households through the random generation of telephone numbers. The second stage involved the choice of eligible respondents (women aged 18-49) in each selected household. The detailed methodological aspect of the survey is given in a report by Trembley and Trudel (1984); therefore, only a brief summary is presented here.

The telephone sample was obtained by means of a computerized generation of random numbers, a procedure which was developed by the Survey Research Center, at the University of Montreal in 1979. A total of 22,169 telephone numbers were dialed randomly. The selection of a respondent from within households meeting survey criteria was also carried out by computer.

About 125 interviewers participated in the survey across Canada, and they underwent a training session that

lasted an average of two days. The selected households were contacted by the interviewers from five Canadian cities: Montreal, Toronto, Regina, Edmonton, and Vancouver. The interviews were conducted in either English or French.

The initial screening took place for all the 22,169 telephone numbers. Once contact was made, the interviewer verified with the person who answered the phone that the number dialed was in fact the number on the label. If the number was valid, the interviewer introduced the survey and estimated the number of men and women aged 18 or over residing at that telephone number. The second step was to identify the telephone numbers of potentially eligible private homes from other commercial or institutional numbers. The final step was to select an eligible person for the interview according to the criteria outlined in the survey. If more than one eligible person was found, the interviewer used the selection grid to select the respondent.

Out of 22,169 random dialings 13,642 were identified as residential numbers, a productivity rate (13,642/22,169) of 61.5 percent. The number of households having an eligible respondent (7,574) resulted in 5,315 completed interviews, a response rate (5,315/7,574) of 70 percent (Trembley and Trudel, 1984). This percentage is slightly lower than that found in face-to-face surveys dealing with similar subjects. For example, the non-response rate was 17.5 percent in the Toronto survey (Balakrishnan, et al., 1978:8); 21 percent in

the Quebec survey (Henripin and Lapierre-Adamcyk, 1974:147); and 29 percent in the Growth of Alberta Families Study (Krishnan and Krotki, 1976:2-3). The sample yield (5,315/22,169) for the Canadian Fertility Survey was 24 percent.

Since the entire interview was conducted on the telephone, the complexity and length of the questionnaire had to be reduced (Balakrishnan, et al., 1985). No information on sensitive topics such as current sexual activity was collected. Nevertheless, the survey was able to collect information on most of the standard topics covered in fertility surveys, such as contraceptive practice, birth histories, attitudes toward marriage, abortion, employment history and family economic status. The average interview lasted 36 minutes. The completed interviews were weighted by using three components: a basic weighting factor, a factor compensating for non-responses and an age/province factor.

In order to validate whether or not the 5,315 women surveyed constitute a nationally representative sample of the population of Canadian women aged 18-49, feasible comparisons are made on the distribution of selected variables between the 1984 survey and the 1981 census of Canada. In such comparisons, attention must be given to the various constraints involved. For example, with regard to target population, the 1984 survey excludes women who did not have a telephone, who did not live in private households, or did not speak either French or English,

whereas the census includes all women. With regard to time frame, the survey was carried out three years after the June 1981 census. In addition, the definition and classification of variables in the survey and census require reasonable adjustment prior to comparison.

Comparison with the 1981 Canadian census on variables such as number of children ever born and mother tongue yielded satisfactory results (Trembley and Trudel, 1984). Table 3.1 presents the comparisons between the 1984 survey and the most accessible and easily comparable data in the 1981 census. The age distribution indicates a general agreement between the survey and census. With regard to marital status the survey underestimates singles and overestimates the married; the differences in the other two categories are negligible. The survey includes more Protestants than Catholics, and once again the difference is not highly significant. The distribution for nativity and ethnicity shows markable differences between the survey and the census. The survey overestimates the native-born and underestimates the foriegn-born. The sample underestimates the two major ethnic groups, the British and the French. However, the relative difference for these two groups is about 10 percentage points between the survey and the census. On the whole, the sample underestimates four of seven ethnic groups. Although the representativeness of the sample is questionable based on the comparisons of some of the above variables, the pattern of the distribution of

Table 3.1 Comparison of distribution on selected variables between 1984 Survey and 1981 Census

Variable	1984 Survey No. (1)	1984 Survey Percent (2)	1981 Census No. (3)	1981 Census Percent (4)	Difference (2-4)
Age:					
18-19	380	7.1	466,810	8.0	-0.9
20-24	1,026	19.3	1,165,995	20.0	-0.7
25-29	1,000	18.8	1,089,370	18.7	+0.1
30-34	911	17.1	1,013,990	17.4	-0.3
35-39	813	15.3	805,840	13.8	+1.5
40-44	639	12.0	661,670	11.4	+0.6
45-49	548	10.3	619,370	10.6	-0.3
Total	5,315		5,823,045		
Marital Status:					
Single	1,159	21.8	1,459,050	25.1	-3.3
Married	3,869	72.8[1]	4,097,660	70.4[1]	+2.4
Divorced	218	4.1	206,790	3.5	+0.6
Widowed	69	1.3	59,545	1.0	+0.3
Total	5,315		5,823,045		
Religion:[2]					
Protestant	1,603	36.5	1,701,820	35.9	+0.6
Catholic	2,152	49.0	2,370,525	50.0	-1.0
Others	627	14.3	668,090	14.1	+0.2
DK and NA	8	0.2			
Total	4,389		4,740,435		
Nativity:[2]					
Native born	3,796	86.5	3,905,539	82.4	+4.1
Foreign born	593	13.5	831,346	17.6	-4.1
Total	4,389		4,740,435		

cont...

Ethnicity:[2]

French	1,019	23.2	1,345,870	28.4	-5.2
British	1,171	26.7	1,835,370	38.7[3]	-3.8
Irish	360	8.2			
German	272	6.2	227,715	4.8	+1.4
Other W.E	614	14.0	764,065	16.1	-2.1
Ukranian	110	2.5	100,230	2.1	+0.4
Other E.E	175	4.0	134,430	2.8	+1.2
Others	233	5.3	332,755	7.0	-1.7
DK and NA	436	9.9			
Total	4,389		4,740,435		

Notes:
1. Includes common-law and separated.
2. Sample size is reduced for religion, nativity, and ethnicity due to inclusion of only women between ages of 20-44. Religion and ethnicity include Yukon and North West Territories.
3. Includes Irish

Sources:

Canada, Statistics Canada
1982 1981 Census of Canada. Cat. Nos. 92-901, 92-911, 92-912, 92-913.

these selected variables supports the sample's representativeness. The sample for the present study includes married and common-law women.

3.1 Variables and their Measurement

The primary dependent variables used in this thesis are current and expected family size. Current family size is simply the respondents' total number of live births. Although it could be argued that pregnancies not resulting in live births are bound to make a difference in current family size, the literature tends to indicate that pregnancy wastages are poorly reported (Bumpass and Westoff, 1970:133-134; Ryder, 1973: 500-501). Therefore, this analysis will limit itself to effective fertility.

The second dependent variable is expected family size, which is the number of live births plus additional births expected. This measure poses a number of problems. The literature shows that expected family size is a good predictor of completed fertility in the aggregate but a poor predictor when individual women are considered separately. The Princeton and Detroit studies report changes in individuals' expected family size over a period of time (Bumpass and Westoff, 1970:21-22; Goldberg, et al., 1959:376). Blake (1974) doubts the data on expected family size in the United States. She suspects that public opinion may have a strong influence on individuals' responses. Goldberg (1975), on the other hand, argues that the

expectation data "place the independent and dependent variables in proper time perspective ... [and] have a greater real world base than questions with family size ideals or desires that contain substantial elements of fantasy, probably differing in form from one respondent to the next" (p. 94). In essence, expected family size in a cross-sectional survey contains retrospective information; that is, younger and older respondents report the total number of children they plan to have (in addition to the number of surviving children). Therefore, any observed difference in fertility among the respondents within the reproductive age can be attributed to various socioeconomic and psychological factors. Westoff and Westoff (1971) suggest that the number of children expected remains the best estimate of the actual numbers the women will ultimately have.

The two measures, current and expected family size, are bound to be influenced by age, particularly current family size (Table 3.2). Therefore, this analysis has removed the age effect. This has been done by measuring each women's fertility as the deviation from the mean for her age. Thus, the effect of age is systematically removed from the fertility measures, called current and expected family size 'net age'.

The independent variables used in this thesis can be classified under background, economic, sociopsychological and biological variables. The rationale for inclusion of

Table 3.2 Unadjusted deviations of current and expected family size by respondent's age.

	N	CURRENT		EXPECTED	
		Cell mean	Unadj. dev	Cell mean	Unadj. dev
18-19	34	.59	-1.39	2.51	.08
20-24	344	.85	-1.13	2.39	-.04
25-29	692	1.39	-.58	2.33	-.09
30-34	698	1.86	-.11	2.16	-.27
35-39	661	2.13	.15	2.22	-.21
40-44	529	2.63	.65	2.65	.22
45-49	428	3.10	1.12	3.10	.67
Total		1.98		2.43	

these variables stems directly from the theoretical and empirical literature reviews. Many of these variables are also selected with an intention to develop a causal model at a later stage.

The following section presents the source and description of the variables used in this study. The question or questions (Appendix D) corresponding to a particular variable are given in parentheses.

A. Background/Structural Variables

a. Respondent's religion (RELIGION:Q117)

1. Protestant: includes Anglican,Baptist, Lutheran, Mennonite, Pentecostal, Presbyterian, and United Church.
2. Catholic(and Orthodox): includes Greek Orthodox, Roman Catholic and Ukrainian Catholic.
3. Others: includes Jewish, Other and None.

b. Respondent's ethnicity (ETHNIC:Q116)

1. French
2. British: includes English, Scottish and Welsh
3. Irish
4. German
5. Other W.E
6. Ukrainian
7. Other E.E
8. Others

c. Residence in youth (RESIDENC:Q111)

1. Rural area
2. Small city
3. Big city

d. Nativity (NATIVITY:Q102,Q104,Q105)

1. Native-born
2. Foreign-born

e. Women's education (WEDUC:Q112)

1. 0-8 years

2. 9-12 years
3. 13-15 years
4. 16+ years

f. Women's income (WINCOME:Q737,Q744,Q746)

1. ≤ 7000
2. 7100-12000
3. 12100-19000
4. 19100 +
5. Missing

g. Family income (FINCOME:Q917)

1. ≤ 25000
2. 25100-35000
3. 35100-49000
4. 49,300 +
5. Missing

B. Economic variables:

In addition to respondent's education (WEDUC),income (WINCOME) and family income(FINCOME) the following variables will be considered under this heading.

a. Husband's education (HEDUC:Q902)

1. 0-8 years
2. 9-12 years
3. 13-15 years
4. 16+ years

b. Husband's income (HINCOME:Q916)

1. ≤ 19000
2. 19100-26000
3. 26100-35000
4. 35100+
5. Missing

c. Feeling of financial success(FSUCCESS:Q800)

1. Not been very successful
2. Reasonably successful
3. Very successful

d. Financial plan for the future(FNCLPLAN:Q801)

1. Never
2. Rarely
3. Occasionally
4. Most of the time

e. Savings for the future (SAVING:Q803,Q804,Q805)

1. Never
2. Time to time
3. Regular basis

f. Standard of living compared to others(STDLIVE:Q915)

1. Better
2. The same
3. Worse

g. Number of work interruptions (INTERUPT)

1. Ever worked
2. 1-2 times
3. 3-9 times
4. Never worked

C. Sociopsychological Variables

a. Sharing household chores(SHARCOOK,HOUSWORK,CHLDCARE, CCLOTHES,SCHLWORK:Q702)

1. Always you
2. Mostly you
3. Equally
4. Mainly partner

b. Making money decisions (DECISION:Q910)

1. Mainly women
2. Equally shared
3. Mostly partner

c. Children distance the spouses (DISTANCE:Q217b)

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly agree

d. Parenting means heavy responsibility (BURDEN:Q217C)

--codes same as Q217b-

e. Child provides goal in life (GOAL:Q217a)

--codes same as Q217b-

f. Child provides source of affection(AFFECTIN:Q217d)

--codes same as Q217b-

g. Children reduce work opportunities outside home (OPCOST:Q751)

1. Not at all
2. Not very much
3. Fair amount
4. A lot

D. Biological variables

a. Use of contraceptives in planning fertility(FPLAN)

b. First birth interval in years (INTERVAL)

c. Duration of marriage in years (DURMAR)

3.2 Method of Analysis

The independent variables used in this thesis are measured by nominal, ordinal and interval scales. The prime concern is with the assessment of the relative importance of these variables proposed under various approaches and the development of a causal model explaining fertility. Keeping these objectives in mind, three methods are adopted here to analyse the data. They are Multiple Classification Analysis (MCA), Analysis of Linear Structural Relationships and Multiple Regression Analysis. Although these techniques have been used extensively by researchers, the latter in particular, we will briefly discuss the first two.

Since many of the independent variables used in the thesis are nominal or ordinal, the use of MCA is most appropriate. This technique is described in greater detail in a text by Andrew et al. (1973). Researchers tend to substitute this technique for regression analysis. Basically, this is an extension of multiple regression

analysis to situations where the independent variables can be in either subclasses or discontinuous variables. MCA can be viewed as a blend of n-way analysis of variance and multiple regression with dummy variables. An advantage of MCA is that no assumption about linearity of the subclasses is required. Over multiple regression with dummy variables, MCA has the advantage of expressing each category subclass of an independent variable as a deviation from the grand mean; in addition, it also provides mean values adjusted for all other variables in the model as well as standardized beta coefficients and multiple correlation coefficients, as in regression.

However, MCA is not without limitations. Though its assumptions are less rigid compared to regression, it is still basically an additive model and ignores interactions unless specifically introduced. High multicolinearity may distort the results to some extent. It is also sensitive to a number of categories and sample sizes; therefore, one has to be cautious in handling variables where non-response categories are high.

Pelz (cited in Sonquist, 1970) describes the Multiple Classification Analysis technique as follows:

"Multiple Classification Analysis asseses how several predictive factors simultaneously determine a dependent variable. As in conventional analysis of variance , from which it is adapted, the program accepts a series of categorical independent variables (predictors), and one

dependent variable (criterion). As in the analysis of variance, the model assumed is that each person's criterion score is composed of a series of additive coefficients, or main effects (deviations from the grand mean), corresponding to the particular category or class in which he stands on each predictor. Let a_i =the coefficient corresponding to the ith category of the predictor A; let b_j = the coefficient corresponding to the jth category of predictor B, etc. : e_{ijk} = a random error term, Y_{ijk} = the observed score of a particular individual who falls in the ith category of A, and jth category of B, etc. It is then assumed that $Y_{ijk} = y + a_i + b_j + \ldots + e_{ijk}$. The problem is to find a set of values for a_i, b_j, etc., which, when introduced into this model reproduce the observed scores with a minimum of error (by least squares criteria)" (p. 71).

The use of the next method, Analysis of Linear Structural Relationships (LISREL), is to satisfy the second objective of the thesis, i.e. to model the determinants of fertility. LISREL, a computer program developed by Joreskog (1973,1977,1978) is used in modeling causal relationships between the variables through latent concepts. LISREL consists of the structural equation model and the measurement model. The structural equation model describes the theoretical causal relationships among the latent variables through a set of general linear equations. The measurement model, on the other hand, describes the measurement of the latent variables by the observable

indicator variables and allows for evaluation of the reliability of such measures. The structural equations and estimation procedures will be discussed in detail in chapter 7.

Once the proposed causal model is fitted for the sample population, it will also be tested for sub-groups, such as ethnicity, religion, region etc. through multiple regression analysis. This approach is taken because of the greater time expenditure and higher financial cost associated with using LISREL for subgroup analysis.

Chapter 4

STRUCTURAL FACTORS AND FERTILITY

Societies differ in group structural characteristics, such as ethnicity, religion, residence, education, occupation and income. Membership along these characteristics places people in distinct social groups with different motives, aspirations, family size ideals and desires, norms and abilities to control fertility (Grindstaff, 1981). Therefore, one way to locate the social factors important in determining variations and changes in population processes is to examine subgroup differences in these processes (Goldscheider, 1971). According to Ryder (1973) "Reproductive behaviour reflects the influence of norms within various contexts. Norms are properties of groups. Therefore, the understanding of reproductive behaviour requires the study of groups and their characteristics (including norms), rather than the study of individuals" (p. 505). To support this further, Goldscheider (1971) suggests that examination of structural differentials represents a fundamental way of locating determinants of causal factors involved in the processes under study. To him, the study of sub-group differentials could be seen as the first step in the formulation of a comprehensive explanatory theory.

Leridon (1982) writes, "Institutions such as families, schools or religious organizations have a natural tendency towards conservatism rather than liberalism or innovation. In fact, this is the very reason why they exist; how would

we imagine that parents, teachers or pastors would transmit to their children, pupils or flock something radically different from what they inherited from previous generations? Of course, each individual can express a judgement on the teachings he has received and adjust his personal behavior to this analysis; but the structures of any society exist basically to regulate and maintain, not to reform" (p. 303). Thus, the prevalence of any particular norm within a group not changing over the course of one's life may be seen as continuities of early childhood socialization pressures. Such social norms and pressures are important components of human decision-making. Namboodiri (1980) agrees that the individual is not free to ignore norms completely: "Norms are there to be adhered to, no matter what the price tag is" (p. 86).

Sociologists studying differential fertility have focused on normative influences because of their assumption that individual behaviour may often be the result of group pressure. As Blake (1968) points out, economic issues are secondary to normative ones; and if people from low socioeconomic positions have larger family sizes than the rich, it is because they are more strongly influenced than the latter by society-wide pronatalist norms. In other words, the perceptions parents have about the minimum resource inputs necessary for childbearing may be strongly influenced by normative pressures stemming from the couple's membership in occupational, educational, religious, or

ethnic groups (Turchi, 1975).

It is, therefore, traditional in demography and sociology to look first at differences arising from structural or background factors. Demographers have long recognized the theoretical inadequacy of most structural explanations (Vance, 1952). According to Turchi (1975b) "reliance solely upon normative arguments in the explanation of fertility differentials is clearly insufficient. Explanations of fertility differentials on the basis of membership in varying social, ethnic, and economic groups have been unimpressive statistically, and, overtime, those differentials which have been discovered have begun to disappear" (p. 14). Similar conclusions are reached by Blake (1966) and Jones and Westoff (1979).

However, a number of views exist concerning how group membership and fertility are related. The basic sociological notion is that behaviour is, to a large extent, a function of group membership, the persistence of subgroup norms which govern fertility (Lorimer,1954), the power of minority group status to determine reproductive behaviour (Halli, 1987; Johnson and Nishida, 1980; Long, 1970; Trovato and Burch, 1980) and the dominant group over subgroups (Jones and Westoff, 1979; Mosher and Hendershot, 1984).

In this thesis, in addition to studying differences in fertility due to background or structural factors, an attempt is also made to test for a characteristic hypothesis. The 'characteristic' approach hypothesizes that

the distinct fertility of subgroups merely reflects the matrix of social, demographic and economic attributes that characterizes these subgroups (Goldscheider, 1971:272). According to this hypothesis, fertility differentials between groups should disappear when various social, demographic and economic characteristics are statistically controlled. This hypothesis has been used by social demographers to study fertility differentials by race, religion, ethnicity, residence, region, etc. (Beaujot, 1975; Goldscheider, 1971; Goldscheider and Uhlenberg, 1969, Johnson et al., 1978; Ram, 1976; Sly, 1970; Trovato, 1981; Trovato and Burch, 1980; Trovato and Grindstaff, 1980; Trovato and Halli, 1983).

The variables under consideration here are those which have been used most frequently and successfully in describing fertility variations in other studies in Canada (eg. Balakrishnan, et al., 1979; Beaujot, et al., 1982; Henripin, 1972; McDaniel, 1978). The variables selected for the present study include ethnicity, religion, nativity, residence in youth, education and family income. These factors are seen by some authors (Easterlin, 1969; Hawthorn, 1970) as determinants of taste or preference.

The MCA analysis used in this thesis will also provide the effects of independent variables after the adjustments made for duration of marriage. The influence of duration of marriage on the dependent variable will be smaller since its influence is already captured in age. Even though the

dependent variables are already adjusted for age, the need for the adjustment for marital duration arises if the variation in this variable is substantial within a given age group across various socioeconomic groups. For example, marriage duration is likely to vary more for younger than for older cohorts of women and, therefore, it is useful to present results after the adjustment for duration of marriage.

Prior to discussing results from this study, it will be worthwhile to review some of the North American literature on differential fertility based on the selected background variables. Some of this material has already been discussed in previous sections.

In the United States, religion is a frequently mentioned factor in investigations into fertility differences. The Growth of American Families Surveys (Freedman et al., 1959; Whelpton et al., 1966) indicated the persistence of religious differences, even after controlling for variables such as education, income, farm background and place of residence. Although the first National Fertility Survey (Ryder and Westoff, 1965) supported such a finding, the second NFS (Westoff, 1975) indicated that these differences are declining in America. The Princeton study (Westoff et al., 1961), on the other hand, finds religious denomination the strongest and most consistent factor in influencing fertility.

Differences in fertility among residents of cities, suburbs, towns, rural areas and farms have long been cited as the major aspects of differential fertility. The 1960 GAF and the 1965 NFS provide somewhat less conclusive evidence: with the exception of rural farm residents, expected fertility by place of residence shows no clear pattern (Ryder and Westoff, 1971). Based his study on data from the Detroit sample, Goldberg (1959) presented evidence indicating that the observed inverse relation between socioeconomic variables and fertility in urban areas is primarily due to the fertility behaviour of rural migrants to the city. When samples were partitioned on the basis of generations, Goldberg found that among rural origin respondents who had resided for at least two generations in the city, the negative correlation between socioeconomic variables and fertility disappeared; a strong inverse relationship was noted among first generation respondents. Goldberg, however, finds that only education remains as a status variable capable of differentiating levels of fertility among second generation respondents. Similar results were found in the Indianapolis data (Goldberg, 1960). There was a relatively strong inverse relationship between socioeconomic variables and fertility among the farm migrants, but this relationship was absent among the urbanites. Freedman and Slesinger (1961), using the 1955 GAF data came to a similar conclusion.

Duncan (1965), from his analysis of 1962 Current Population Survey data, concluded that either of the two following characterististics is a sufficient condition for controlled fertility: two generations of non-farm residence, or attainment of high levels of schooling. Blau and Duncan tested the same hypotheses using a national sample in the framework of a social mobility survey (Duncan, 1964; Blau and Duncan, 1967). They concluded that couples with a farm background (educated in farm areas) had a higher fertility at each status level than couples with no farm background, but the difference diminished from the lower to the higher status groups. On the other hand, there was a negative correlation of fertility to socioeconomic status in both the non-farm and farm background groups. Therefore, Goldberg's thesis about different intake of farm immigrants with higher fertility was not supported. The interpretation given for this finding is that movement to non-farm residences from farm backgrounds is in a way a form of social and occupational mobility. Such a move is accompanied by a reduction of fertility. However, the amount of reduction is directly related to the degree of upward mobility in the non-farm sector.

With regard to education, in the United States the Indianapolis Survey demonstrated a slight positive relation between fertility and education among urban couples planning their fertility. The NFS, on the other hand, showed a weak negative relation of education to children ever born, as

well as desired and expected fertility. Exception to this generalization is that women having the highest education i.e. four years of college or more, displayed a slightly higher desired and expected number of children. Blake and Pinal (1982), drawing on an analysis of two larger data sets (five national fertility surveys and six national Gallup surveys), argue that the inverse relationship of education and actual fertility in the United States is not simply due to the enhanced availability of means of birth control to people of greater educational attainment. The more educated the individual the less likely he or she is to value a large family. Further, they report that the effects of education on family-size preferences are not entirely due to other associated characteristics, such as race, income, occupation, or community size. The relationship between education and fertility preferences remained even after being controlled for other background factors. Blake and Pinal also report the presence of education-religious affiliation interaction observed in other studies (Freedman et al., 1959; Westoff et al., 1961; Whelpton et al., 1966; Westoff et al., 1963).

American fertility surveys have also dealt with the relationship of income to fertility. The Indianapolis survey (Kiser and Whelpton, 1953) showed a negative relation of fertility to income, with a slight rise in the fertility of the highest income group as compared to the second highest. Goldberg (1960) and Duncan (1965), however, in reanalyzing

the results found a clear positive correlation of fertility to income, if the couples with farm background were removed. The Princeton survey (Westoff et al., 1961; 1963) showed positive relationship between income and fertility among Catholics, but a less clear relationship in the case of Protestants and Jews. The GAF and NFS studies showed no consistent relationship between income and fertility. The Catholics, both in 1960 and 1965, showed a U-shaped relationship, while in the case of Protestants the relationship was almost zero in 1960 and negative in 1965. Freedman (1963) reanalyzed the data of the GAF by taking into consideration the following economic variables: husband's absolute and relative incomes, wife's income, years the wife has worked since marriage, wife's labour force status, and wife's future work expectations. She analysed the couples separately according to duration of marriage. Couples married 5-9 years showed no significant correlation of absolute or relative income to fertility but showed a weak negative correlation with absolute income and a positive correlation with relative income among couples married few or more years. The correlations did not change even after controlling for other sociodemographic variables. A similar observation was made by Freedman (1966) based on the analysis of Detroit Areas Studies.

Some Canadian studies have examined fertility differentials similar to those of the United States. The studies indicate that Catholics have higher fertility than

Protestants (Balakrishnan et al., 1975; Beaujot, 1975; Charles, 1948; Henripin, 1968). Long's study (1970), based on the 1961 census marital fertility, shows that religious differentials in Canada are decreasing and that the effect of religion is weakened or strengthened by ethnic and other group influences. Krotki and Lapierre's study (1968), based on 1961 census, showed that the population with the same denomination but different ethnic background show different levels of fertility. They have also noted that British Catholics have more children than French; the reverse is true for non-Catholics. Groups with either one of the two characteristics (French or Catholic) have higher fertility than others. Balakrishnan et al. (1979) in their 1971 census analysis indicate that religion is a significant factor in explaining fertility differentials but even more so for older women in comparison to women under thirty. They also observed the narrowing of the differences among the various religious groups.

Henripin (1972) analyzed 1961 Canadian census data and found that among younger cohorts of women aged 15 to 24, rural residents had higher birth rates than urban women in the same age category, but the difference was slight. Among older respondents, the gap between rural and urban fertility increased linearly with age. Balakrishnan et al. (1979) based on 1971 census analysis concluded that type of residence has significant influence on fertility even after controlling for other variables. However, according to

Collishaw (1976) fertility is declining in urban and rural populations, and the gap in level of reproduction by residence has narrowed considerably, particularly among the younger ages. Beaujot (1975) showed no significant influences of residence on fertility.

In general, the Canadian studies show significant inverse relationship between education and fertility (Balakrishnan et al., 1979; Beaujot, 1975; Charles, 1948; Henripin, 1972). Ethnicity is another important variable used in fertility analysis. Balakrishnan et al.(1979) show that the average number of children is higher for the British group, followed by French and other Europeans. Beaujot (1975) drawing on the Edmonton sample, reports the current family size is higher for French than British. The latter two studies also report that foreign-born women have fewer children than women born in Canada. No consistent relationship is observed between income and fertility in Canadian studies.

4.1 Bivariate Analysis of Structural Factors

Table 4.1 presents the bivariate relationship of current family size with structural factors. The analysis of expected family size revealed similar results and is therefore not discussed here.

Based on the eta values from the table, it is clear that women's education (.21) is an important factor in explaining variation in current family size, followed by

Table 4.1 Current family size(net age) by structural factors. Unadjusted and adjusted deviations by marriage duration.

Var.category	N	Class mean	Unadj. dev.	Adj. DURMAR	Eta	sig of F
Religion	(Grand mean=.05)					
1. Protestant	1325	.04	-.01	-.02	.04	.041
2. Catholic	1617	.09	.04	.04		
3. Others	437	-.08	-.12	-.10		
Ethnicity	(Grand mean=.03)					
1. French	761	.06	.03	.03	.09	.002
2. British	946	.01	-.03	-.04		
3. Irish	288	.07	.04	.03		
4. German	223	.04	.00	.00		
5. Other W.E	471	.18	.15	.15		
6. Ukrainian	76	-.29	-.32	-.30		
7. Other E.E	120	-.29	-.32	-.30		
8. Others	175	-.05	-.08	-.05		
Nativity	(Grand mean=.05)					
0. Foreign-born	539	-.10	-.19	-.21	.07	.000
1. Native-born	2844	.06	.04	.04		
Residence	(Grand mean=.05)					
1. Rural	1042	.21	.16	.15	.11	.000
2. Small city	1153	.06	.01	.01		
3. Big city	1166	-.11	-.16	-.14		
Women's education	(Grand mean=.05)					
1. 0-8 years	308	.60	.56	.48	.21	.000
2. 9-12 years	1672	.17	.12	.11		
3. 13-15 years	925	-.13	-.18	-.16		
4. 16 + years	477	-.38	-.42	-.40		
Family income	(Grand mean=.04)					
1. LE 25000	636	.31	.26	.30	.17	.000
2. 25100-35000	685	.11	.06	.08		
3. 35100-49000	660	-.06	-.11	-.10		
4. 49300+	678	-.29	-.34	-.36		
5. Missing	728	.18	.13	.09		

* Eta is the square root of the ratio of the sum of squares based on the unadjusted deviation for predictor to total sum of squares. It is the correlation ratio and indicates the capacity of the predictor variable to explain variation in the dependent variable.

family income (.17), residence in youth (.11), ethnicity(.09), nativity (.07) and religion(.04). All these variables show significant relationship with fertility.

As can be seen from table 4.1, religion does not have a very large influence on current family size. The ranges for unadjusted and adjusted deviations are .16 and .14 respectively. It is seen that the unadjusted means are largely unchanged even after being adjusted for marriage duration. As expected, the mean number of children is lower for Protestants and 'others', than for Catholics. However, the differences between Protestants and Catholics are relatively smaller.

The respondent's ethnicity also exercises very little influence on fertility. The range is .47 for the unadjusted means. The observed differences among ethnic groups are not particularly large or larger than those observed by others (for example Balakrishnan et al., 1975; Beaujot, 1975). The mean number of children is lower for four of the ethnic groups, particularly among the Eastern Europeans. However, the deviation from the grand mean is much smaller for the Western Europeans in comparison to Eastern Europeans. These differences hold true even when adjustments are made for duration of marriage. The fertility differentials between British and French are smaller, in contrast to larger differentials reported in earlier studies.

The influence of nativity on fertility is as expected: foreign-born women have a lower number of children than

native-born women. According to Balakrishnan et al. (1979) such a differential is mainly due to the fact that large numbers of immigrants come from European countries, where fertility is lower than in Canada. The fertility is lower even among non-European immigrants because of selectivity according to education and other socioeconomic and demographic factors.

Variables such as residence in youth, women's education and family income show the expected inverse relationship with fertility. These relationships do not change even after adjustments are made for duration of marriage. The only exception is a sizable reduction (.56 -.48=.08) in fertility for women with 0-8 years of education.

In sum, the findings from bivariate analysis suggest that education and income continue to play important roles in explaining fertility behaviour. The fertility differentials by religion and ethnicity are smaller, while those for nativity and residence appear to be intermediate.

4.2 Multivariate Analysis of Structural Factors

This section intends to examine the influence of structural factors when adjusted for other factors. The adjusted MCA coefficients will be meaningless if interaction is present. Therefore, we need first to test for interaction among the variables.

Table 4.2 presents the results from MCA analysis for all the background factors. The analysis indicates

Table 4.2 Current family size(net age) by structural factors. Unadjusted and adjusted deviations by independent variables and marriage duration (DURMAR).

Var.category	N	Unadj. dev	Adj. for indep	Adj. for indep & DURMAR	Beta	Sig of F
		(Grand mean = .04)				
Religion						
1. Protestant	1223	.00	-.01	-.02	.02	.814
2. Catholic	1414	.04	.02	.02		
3. Others	412	-.11	-.02	-.01		
Ethnicity						
1. French	761	.02	-.11	-.11	.09	.001
2. British	937	-.02	.03	.02		
3. Irish	286	.04	.03	.02		
4. German	220	.00	.00	.01		
5. Other W.E	472	.15	.18	.19		
6. Ukranian	76	-.33	-.29	-.28		
7. Other E.E	122	-.31	-.22	-.21		
8. Others	174	-.09	.08	.10		
Nativity						
0. Foreign-born	515	-.18	-.17	-.19	.07	.001
1. Native-born	2534	.04	.03	.04		
Residence						
1. Rural	929	.15	.10	.09	.05	.005
2. Small city	1042	.02	-.02	-.01		
3. Big city	1077	-.14	-.07	-.07		
Women's education						
1. 0-8 years	263	.56	.47	.36	.14	.000
2. 9-12 years	1477	.13	.10	.09		
3. 13-15 years	856	-.17	-.15	-.12		
4. 16 + years	453	-.42	-.31	-.27		
Family income						
1. LE 25000	549	.26	.19	.23	.13	.000
2. 25100-35000	609	.09	.05	.07		
3. 35100-49000	593	-.09	-.06	-.06		
4. 49300+	646	-.33	-.22	-.25		
5. Missing	653	.11	.07	.05		

* Beta measures the relative importance of various predictors in their explanation of the dependent variable, if all other predictors are held constant.

significant interaction of ethnicity with religion, residence, and women's education, and religion with nativity and women's education. In situations of interaction the explanatory power of any single variable cannot be determined. This problem will be handled a little later.

Table 4.2 clearly indicates that religion does not have any significant influence on fertility. When controlled for other factors, the adjusted means, although not meaningful, show that French women are likely to have fewer children than British women and 'others'. No major changes in the direction of variable influence are observed. The magnitude of the effects, however, does change during the course of adjustment. The beta coefficients indicate that women's education is the most important factor in explaining fertility behaviour, followed by family income, ethnicity, nativity, and residence.

Since interactions are present, a different approach must be taken to understand the explanatory power of the structural factors. The approach taken here is a regression decomposition model developed by Coleman et al. (1972). This approach is particularly useful in testing any competing hypotheses. In the present study the purpose is to examine the relevance of structural explanations to fertility analysis. The variables of ethnicity and religion are combined in the analysis for a number of reasons. First, in addition to their own interaction, they also interact with other variables. Secondly, studies report that ethnicity and

religion jointly explain greater variation in fertility (for example, Balakrishnan et al., 1979; Krotki and Lapierre, 1968; Long, 1970). Therefore, it would be beneficial to study fertility differentials in ethno-religious groups in the light of other background variables. It is possible from the procedure adopted here to decompose the observed ethno-religious differentials and to state how far the structural explanations hold true.

According to Coleman et al. (1972), the observed differences in average family size ($Y_B - Y_O$) between British and others can be decomposed into the following four components:

$$(Y_B - Y_O) \approx 1/2 \sum (b_{iB} + b_{iO})(\bar{X}_{iB} - \bar{X}_{iO}) + \ldots\ldots\ldots\ldots\ldots (A)$$

$$1/2 \sum (b_{iB} - b_{iO})(S_{iB} + S_{iO}) + \ldots\ldots\ldots\ldots\ldots (B)$$

$$\sum (a_B - a_O) + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (C)$$

$$1/2 \sum (b_{iB} - b_{iO})(\bar{X}_{iB} - S_{iB} + \bar{X}_{iO} - S_{iO}) \ldots\ldots (D)$$

The b_i are multiple regression coefficients obtained by regressing the dependent variable on all independent variables for each ethno-religious group; and the X_i and S_i refer to the means and standard deviations; a's refer to the intercepts in the equations. The subscripts B and O refer to British and Other ethnic groups respectively. For simplicity, subscripts for religion are not included.

Component A presents the effect due to mean differences in structural variables. This component shows whether the equalization of the variable means ($\bar{X}_i$), weighted by the corresponding average regression coefficients (b_i), will

lead to equalization of fertility. If the overall value derived from this component is positive or negative, the interpretation is that compositional differences do account for a portion of observed fertility differences. A negative value implies a lowering of fertility differences. A zero value means that the observed fertility differences are not due to compositional differences (Trovato and Burch, 1980).

Component B represents the difference in regression slopes or the interaction effect of ethno-religious groups with the independent variables in the analysis. A value other than zero (negative or positive) means that ethno-religious groups interact with the compositional variables. A positive value indicates that the net effect of differences in the b_i is to raise fertility of a given ethno-religious group in comparison to the reference group (British), independent of the other types of effects. A negative value has similar but opposite interpretation.

Component C is the difference between intercepts, providing the main effect of ethno-religion on fertility. A positive value means that the net effect of the ethno-religious group is to lower fertility below the reference group independent of interaction (B) and compositional differences (A). A negative value will have similar but opposite interpretation. Thus, a non-zero difference means that even if the two groups had identical means on the various independent variables, and even if the effects of these variables (as represented by b_i) were

identical, the family size of the two groups would differ by that amount (Jiobu and Marshall, 1977). The last term (D) represents that part of the fertility differentials due to unmeasured variables. It is analogus to error term in regression analysis. A negative value indicates that the impact of unmeasured variables would be to decrease ethno-religious groups' fertility relative to the reference group.

Table 4.3 shows the means and standard deviations of all the variables in the analysis by ethnicity and religion. Some of the categories in ethnicity and religion are collapsed because of smaller sample size. With regard to average family size, Catholic women belonging to British, German and other ethnic groups are likely to have more children than their non-Catholic counterparts. The non-Catholics category in the study sample is composed mainly of Protestants. When all the ethnic groups are considered, the other Western Europeans have more children irrespective of their religious background, and the opposite holds true for Eastern Europeans.

The general pattern that emerges from the remaining variables in table 4.3 can be summarized as follows: 1) Catholic women of British, French, Irish and German ethnic origins have a slight edge over their counterparts (non-Catholics) on nativity scores; for the remaining three ethnic categories (other W.E, E.European and others) the non-Catholics have that edge. Members of the 'other' ethnic

Table 4.3 Means and standard deviations for study variables by religion and ethnicity

	CATHOLICS						
	British	French	Irish	German	Other W.E	E.European	Others
FERTILITY	.114	-.014	.028	.149	.166	-.471	.098
	(1.156)	(1.156)	(1.091)	(1.412)	(1.500)	(.925)	(1.207)
NATIVITY	.857	.986	.955	.831	.648	.714	.293
	(.352)	(.117)	(.208)	(.378)	(.479)	(.455)	(.462)
RESIDENC	2.152	1.788	1.985	1.942	2.247	2.143	2.582
	(.776)	(.781)	(.807)	(.841)	(.752)	(.795)	(.642)
WEDUC	12.546	11.914	12.542	12.058	11.774	13.145	12.595
	(2.200)	(3.025)	(2.306)	(2.111)	(3.4[illegible])	(2.874)	(2.855)
FINCOME	415.423	372.238	406.769	381.23[illegible]	381.[illegible]56	431.960	375.384
	(184.304)	(184.741)	(199.177)	(152.02[illegible]	(174.[illegible])	(184.328)	(191.669)
DURMAR	13.084	12.868	12.735	14.989	12.[illegible]	10.744	12.582
	(7.687)	(7.605)	(6.949)	(7.909)	(8.[illegible])	(7.570)	(7.922)

	NON-CATHOLICS						
	British	French	Irish	German	Other W.E	E.European	Others
FERTILITY	-.024	.001	.039	-.123	.269	-.243	-.047
	(1.155)	(.889)	(1.143)	(1.074)	(1.307)	(1.099)	(1.055)
NATIVITY	.809	.912	.914	.814	.825	.898	.398
	(.394)	(.285)	(.282)	(.391)	(.381)	(.305)	(.492)
RESIDENC	2.118	2.204	2.049	1.971	2.033	2.228	2.459
	(.793)	(.682)	(.859)	(.864)	(.812)	(.819)	(.707)
WEDUC	13.096	12.823	12.713	12.923	13.020	13.336	13.246
	(2.794)	(2.088)	(2.434)	(2.612)	(2.993)	(2.802)	(3.821)
FINCOME	415.875	371.248	358.741	421.447	420.857	397.660	418.356
	(203.847)	(165.103)	(172.087)	(216.993)	(195.243)	(162.459)	(224.765)
DURMAR	13.685	11.630	13.789	11.950	13.597	11.450	11.455
	(7.911)	(8.405)	(8.492)	(8.169)	(8.527)	(8.309)	(7.900)

* Standard deviations are shown in parenthesis

category are, in general, likely to be foreign-born. 2) No consistent pattern emerges in terms of residential preferences, except for the 'others' category. Irrespective of their religious background, members of the 'others' category prefer to live in big cities. This attraction to big cities may be due to their higher levels of education (rank second to E. Europeans), which enable them to find suitable jobs. 3) In terms of educational status, non-Catholic women are better educated than Catholics. 4) British family income is higher than French; this difference remains when religion is taken into account. The French have the lowest income among Catholics and the second lowest among the non-Catholics. 5) Duration of marriage does not show any consistent pattern across the groups; however, four of the non-Catholic groups have longer marriage duration than their counterparts. In sum, there are considerable variations among the sub-groups on various structural or compositional variables, all of which would enable us to explain subgroup fertility differentials.

Results from the multiple regression analysis given in table 4.4 indicate that the significant coefficients have an expected influence on fertility, except for the Irish ethnic group; for this group, fertility increases with education and decreases with marriage duration. In general, nativity, residence and marriage duration are less important determinants of fertility for the majority of the groups under study than education and income. For example, nativity

Table 4.4 Multiple regression analysis of current family size by ethnicity and religion.

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
BRITISH									
Cath	127	1.5254	b.	.0318	.0479	-.1049 (**)	-.00085	.0098	.0826
			B.	.0097	.0321	-.1997	-.1358	.0650	
			r.	-.015	.027	-.257	-.175	.104	
Non-Cath	604	1.2947	b.	.1662	.0178	-.0967 (****)	-.00082 (****)	.0084	.1106
			B.	.0567	.0122	-.2340	-.1444	.0579	
			r.	.115	-.042	-.299	-.216	.059	
FRENCH									
Cath	568	.7534	b.	.1285	-.1087 (*)	-.0462 (***)	-.00061 (**)	.0060	.0499
			B.	.0130	-.0734	-.1207	-.0972	.0393	
			r.	.025	-.109	-.189	-.156	.089	
Non-Cath	60	.6857	b.	.0900	-.0403	-.0512	-.00050	.0140	.0452
			B.	.0288	-.0310	-.1202	-.0920	.1322	
			r.	.010	-.044	-.175	-.096	.104	
IRISH									
Cath	100	-.6475	b.	.3996	-.2197	.0963 (*)	-.0014 (***)	.0086	.0954
			B.	.0761	-.1626	.2035	-.2636	.0550	
			r.	.065	-.183	.045	-.207	-.059	
Non-Cath	134	1.048	b.	.3699	-.0053	-.0436 (***)	-.0014 (*)	-.0203	.0960
			B.	.0911	-.0040	-.0929	-.2105	-.1510	
			r.	.106	-.002	-.104	-.258	-.148	

cont...

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
GERMAN									
Cath	50	2.3596	b.	-.1683	-.4064	-.0433	-.0026 (*)	.0157	.1754
			B.	-.0451	-.2420	-.0648	-.2809	.0879	
			r.	-.078	-.241	-.283	-.280	.190	
Non-Cath	119	.4199	b.	.0189	-.0022	-.0472	-.00019	.0113	.0287
			B.	.0069	-.0018	-.1149	-.0379	.0862	
			r.	-.005	-.040	-.150	-.060	.106	
OTHER W.E									
Cath	174	1.4710	b.	.2881	-.3263 (**)	-.0283	-.0018 (***)	.0195	.1263
			B.	.0920	-.1635	-.0645	-.2063	.1042	
			r.	.065	-.225	-.218	-.255	.161	
Non-Cath	194	2.1917	b.	.2556	-.2027 (**)	-.1571 (****)	-.00013	.0278 (****)	.2366
			B.	.0744	-.1259	-.3597	-.0188	.1810	
			r.	.131	-.185	-.431	-.068	.261	
E.EUROPEAN									
Cath	76	.5791	b.	.4021 (*)	-.0132	-.0692	-.00090	-.0011	.1220
			B.	.1976	-.0113	-.2150	-.1786	-.0092	
			r.	.129	-.113	-.259	-.224	.052	
Non-Cath	69	.7713	b.	.0125	-.2996 (*)	.0116	-.0016	.0113	.1286
			B.	.0035	-.2232	.0295	-.2388	.0855	
			r.	-.035	-.278	-.150	-.266	.089	

ETHNICITY/ RELIGION	N	CONSTANT		NATIVITY	RESID	WEDUC	FINCOME	DURMAR	R SQR
OTHERS									
Cath	33	-.2034	b.	.8752 (*)	-.0618	-.0302	-.00071	.0522 (*)	.2343
			B.	.3352	-.0329	-.0714	-.1135	.3424	
			r.	.296	.041	-.191	-.110	.322	
Non-Cath	82	.7866	b.	-.3343	.1392 (****)	-.1164	.00028	.0333 (***)	.331
			B.	-.1560	.0933	-.4216	.05984	.2492	
			r.	-.227	.095	-.486	.056	.323	

Note: The level of statistical significance for each estimate under the one tailed t-test is indicated by ****, ****, ** and * for one, two, five and ten percent levels respectively.

exerts significant (barely) influence only for Catholics of Eastern European and 'other' ethnic groups. Residence is a strong predictor for other Western Europeans, but it is not so for the French Catholics and Eastern European non-Catholics. Duration of marriage, surprisingly, seems to exhibit significant influence only on four subgroups. This could be due largely to the fact that the effect of marriage duration is already taken over by age. With few exceptions, status variables such as education and income continue to play important roles in explaining fertility differentials among the Western Europeans. However, in the 'other-non-Catholics' category only education has a significant influence on fertility.

4.3 Regression Decomposition Analysis

The decomposition analysis tries to separate out the proportion of the difference in dependent variable (fertility) between groups due to different values of the independent variables (variable effect), the proportion due to the different effects of the independent variables (interaction effect), and due to unmeasured variables (error term).

Table 4.5 presents the results of decomposition analysis based on information from tables 4.3 and 4.4. The actual fertility differentials observed between the British and other ethno-religious groups appear to be small in most cases, but this fact may be of substantive interest in the

Table 4.5 Regression decomposition of current family size (net ages) by ethnicity and religion.

	FRENCH		IRISH		GERMAN		OTHER N.E		E. EUROPEAN		OTHERS	
	Cath	N-cat	Cath	N-cat	Cath	N-cat	Cat	N-cat	Cath	N-cat	Cath	N-cat
Actual difference: (British-Others)	.128	-.035	.086	-.063	-.035	.099	-.052	-.293	.585	.219	.212	.023
Variable levels (A) (compositional differences)												
NATIVITY	-.0103	-.0132	-.0211	-.0281	-.0018	-.0005	.0334	-.0034	.0310	-.0080	.2558	-.0345
RESIDENCE	-.0111	.0010	-.0143	.0004	-.0376	.0011	.0132	-.0079	.0002	.0155	.0030	-.0268
WEDUC	-.0477	-.0202	.0000	-.0269	-.0362	-.0124	-.0514	-.0096	.0521	.0102	.0033	.0160
FAMINC	-.0315	-.0295	-.0097	-.0634	-.0590	.0028	-.0450	.0024	.0145	-.0220	-.0312	.0007
DURMAR	.0017	.0230	.0032	.0006	-.0243	.0171	.0033	.0016	.0102	.0220	.0156	.0465
Subtotal	-.0989	-.0389	-.0419	-.1174	-.1589	.0081	-.0465	-.0169	.1080	.0177	.2465	.0018
Differences between intercepts(C)	.7720	.6090	2.1729	.2467	-.8342	.8748	.0544	-.8970	.9463	.5233	1.7288	.5081
Variable effects (B) (Interaction: ethno-religion with variables)												
NATIVITY	-.0227	.0259	-.1030	-.0689	.0730	.0578	-.1065	-.0346	-.1494	.0537	-.3433	.2217
RESIDENCE	.1219	.0428	.2118	.0191	.3673	.0166	.2859	.1770	.0480	.2558	.0778	-.0910
WEDUC	-.1534	-.1111	-.4533	-.1388	-.1328	-.1338	-.2155	.1748	-.0906	-.3030	-.1888	.0652
FAMINC	-.0443	-.0590	.1055	.1090	.2943	-.1326	.1704	-.1377	.0092	.1429	-.0263	-.2357
DURMAR	.0291	-.0457	.0088	.2354	-.0460	-.0233	-.0761	-.1594	.0832	-.0235	-.3309	-.1968
Subtotal	-.0694	-.1471	-.2302	.1558	.5558	-.2153	.0582	.0201	-.0996	.1259	-.8115	-.2366

Unmeasured (D)

NATIVITY	-.0664	.0397	-.2302	-.1066	.0958	.0617	-.0884	-.0384	-.1415	.0775	-.1417	.0803
RESIDENCE	.1866	.0827	.3417	.0290	.5627	.0243	.5372	.2807	.0832	.4339	.1819	-.1868
WEDUC	-.5645	-.4786	-2.071	-.5464	-.6250	-.5102	-.7159	.6139	-.3680	-1.128	-.7502	.1943
FAMINC	-.0502	-.0669	.1206	.1156	.4028	-.1312	.2082	-.1510	.0120	.1744	-.0290	-.2231
DURMAR	.0203	-.0252	.0067	.1589	-.0368	-.0139	-.0497	-.1052	.0467	-.0129	-.2132	-.1161
Subtotal	-.4742	-.4483	-1.8322	-.3495	.3995	-.5693	-.1066	.6000	-.3676	-.4551	-.9522	-.2514
Total*	.1295	-.0253	.0686	-.0644	-.0378	.0983	-.0405	-.2938	.5871	.2118	.2116	.0219

* Totals do not add up exactly to the actual differential due to rounding.

present context. French Catholics have .128 fewer children than British Catholics and French non-Catholics. The finding of lower fertility for French Catholics contradicts Beaujot's (1975) findings but supports those of Balakrishnan et al. (1979). However, the former study is based on the Edmonton sample. The present analysis shows further that British religious groups have fewer children than Irish non-Catholics, German Catholics and other Western Europeans, but have more than Catholics of Eastern European and 'other' ethnic origin.

The remainder of this section examines how much of these differences in family size between the British and others can be accounted for by the differences in socioeconomic and demographic variables.

The subtotal for component A suggests that for the Western Europeans (except German non-Catholics), equalization of variable levels to those of the British group results in the lowering of fertility. Such equalization, on the other hand, results in increasing fertility for Eastern Europeans and others, provided the relationship between the variables for these two groups remain as it now is. Note also, Catholics of different ethnic origins are affected more so by equalization than are non-Catholics (except the Irish). It is also clear that education and income are important among Western Europeans (with few exceptions) in reducing fertility. These two factors tend to increase fertility among Eastern European

Catholics. Education, however, serves to lower fertility among non-Catholics of 'other' ethnic origin. Nativity appears to be an important factor for Eastern European and other Catholics. It raises fertility above that of the British, thus suggesting that foreign-born members of these groups may be responsible for current lower average family size. The equalization of duration of marriage for subgroups to that of the British raises fertility, particularly for other non-Catholics (except German Catholics). In sum, the groups that are likely to benefit from such adjustments are Western Europeans. For German Catholics, for example, all factors (except nativity) serve to lower their fertility but serve to raise fertility for Eastern Europeans. In essence, the hypothetical experiment we have conducted suggests that structural factors do account for a small portion of observed fertility differences between the British and other groups.

The main effect or normative aspect (Lopaz and Sabah, 1978) of ethno-religious groups on fertility is shown by the difference between intercepts (component C). These effects are much stronger than the effects due to differences in structural variables (component A). This suggests that members of different groups have different norms and values with regard to appropriate family size. The results, in general, indicate that the independent effect of ethno-religion for various subgroups is to lower fertility below the level of the British. However, among German

Catholics and other Wetern European non-Catholics the effect is to raise fertility by .834 and .897 respectively. It is also important to note that equalization of variable means for Catholics of Irish and other ethnic origin to those of the British would have resulted in raising their fertility by 2.17 and 1.73 respectively. But the current situation is that former group's fertility is lower than that of the British.

The interaction effect (component B), as mentioned earlier, represents the difference in slopes. In substantive terms, it is that amount by which the difference in average fertility would be lessened (or increased) if the slope of the subgroup regression line became equal to that of the British line, provided the relationship between variables remains as it is now for the subgroup. The results show that the interaction effects (as revealed by the subtotals) are much smaller than the main effects, but larger than the effects of variable levels. This fact in turn suggests that, apart from the direct effects of ideas held by members of different groups (cultural context) on fertility, they also modify the way in which the independent variables interact. The interaction component is of greater value in explaining fertility differences among French non-Catholics, Irish, Germans, Eastern European non-Catholics and others. The sum of effects suggests that the interaction effect is to lower fertility among non-Catholics of French, German and other ethnic groups and Catholics of Irish and other ethnic

groups. These reductions are mainly due to education(-.4533) for Irish Catholics; education (-.1338) and income (-.1326) for German non-catholics; nativity (-.3433), education (-.1888) and duration of marriage (-.3309) for 'other' Catholics; and income (-.2357) and duration of marriage (-.1968) for 'other' non-Catholics. Education, in general, interacts with ethno-religious groups to lower fertility below the level of British religious groups.

On the other hand, interaction effects serve to raise fertility among non-Catholics of Irish (.1558) and Eastern European (.1259) origin, and Catholics of German (.5558) origin. These increments are largely due to income (.1090) and duration of marriage (.2354) for Irish non-Catholics, and residence and income for Eastern European non-Catholics (.2558,.1429) and German Catholics (.3673,.2943). Residence, in general, interacts with ethno-religious groups to raise fertility.

The error term (component D) represents that part of the fertility differential due to unmeasured variables. Although it does not have any substantive interpretation, it does indicate that in most ethno-religious groups its impact would be to decrease family size relative to the British. It is interesting to note, particularly among Irish and 'other' Catholics, that the factors likely to keep their family size below the level of British are not captured by the present model. In fact, a great portion of variation, particularly with regard to the way in which education acts to raise or

lower fertility in relation to any other variables in the model, remains unexplained.

The following generalizations, then, can be drawn from the decomposition analysis: 1) the equalization of mean differences in variable levels explains, to a certain extent, the variations in fertility; in general, the equalization serves to lower fertility among the Western Europeans. 2) The main effect or normative aspect of different ethno-religious groups continue to exert strong influence on fertility. In most cases, the various norms and values associated with a given group favours smaller family size in relation to the British. 3) The interaction effect seems to be more important than variable level effect in explaining fertility differences. Although the results are mixed, the ethno-religious groups interact systematically with education and duration of marriage to reduce fertility. 4) A substantial portion of variance in fertility remains unexplained in the analysis.

In conclusion, we can say that the structural factors account for only a small portion of variance in fertility. Religion does not have significant influence on fertility when other factors are held constant. However, when religion is combined with ethnicity, the results show that the average number of children are higher for Catholics on three groups (British, German, and Others) in comparison to non-Catholics (composed primarily of Protestants). Women's education and her family income appear to be the stronger

predictors of fertility.

Because of the presence of significant interactions of ethnicity and religion with other variables, the regression analysis has been done separately for each ethno-religious group. Once again, education and income exert a strong influence on fertility but vary in their magnitude of effect across groups. Nativity appears to be a significant factor for Eastern Europeans and 'others'. The regression decomposition analysis indicates that the characteristics or differential levels hypothesis provides very little support for the ethno-religious fertility differentials. Equalization of differences in variable means to those of the British generally results in the lowering of fertility among the Western Europeans. Eastern Europeans and 'others' are not benefited by such adjustments, however. This may be due to the fact that the majority of them are foreign-born (particularly the Catholics), score higher on status variables, and already have a smaller family size. It is also important to note that ethno-religious group by itself exerts significant influence on fertility. This indicates that group norms and values continue to play an important role in explaining fertility. However, the present model, even in a heuristic manner, does not capture the realm of how these factors are translated into reducing or increasing fertility. For example, the analysis demonstrates that while education acts to lower fertility, place of residence acts to increase the same, for various ethno-religious groups.

Evidently, a significant portion of variance in ethno-religious fertility differentials remains unexplained by these two variables. Therefore, we need to look elsewhere for explanations.

Chapter 5

ECONOMIC DETERMINANTS OF FERTILITY

A number of researchers have indicated the importance of the role of economic variables in fertility analysis. The approaches available to understanding the role of such factors are discussed in chapter 1. The economic approach, in general, claims that fertility decisions are arrived at through a consideration of relative preferences for children (as compared to other consumer goods), direct and indirect (opportunity) costs of children, and the couples' standard of living. The purpose of this chapter is to identify the crucial economic determinants and their relevance to fertility analysis.

The economic approach to fertility was developed by Leibenstein (1957), Becker (1960), Freedman (1963), and Easterlin (1966, 1969, 1973, 1975). Although Leibenstein (1957) laid the ground work for incorporating essential elements into an economic model, demographers generally take their point of reference from Becker's (1960) work. Becker applied the theory of demand for consumer durables to the demand for children. According to him an increase in income will enable couples to have more children and to spend more money on each child. However, he suggests that the quantity elasticity of children will be small in comparison to the quality elasticity. In other words, couples with higher income tend to increase the quality of their children instead of merely increasing the number of children to their

satisfaction. He tested his model using the data from the Indianapolis survey and found that the husband's current income and fertility are negatively related. Although such a relationship is not strong enough to refute the positive income-fertility relationship, this finding may be due to unevenly distributed knowledge of contraceptives. For example, couples may have more children than they desire because of inadequate knowledge of contraception at lower income level. Thus, Becker suggests the use of desired rather than actual fertility in testing economic models.

Several aspects of Becker's model have undergone close scrutiny by researchers. Willis (1973), for example, argues that the insignificant relationship between income and fertility may be due to a tradeoff between the quality and quantity of children. Couples with higher income may prefer higher quantity and quality of children. But the cost of children may reduce the resources for additional children. Therefore, the quantity-quality tradeoff of children discourages a higher number of children (Freedman and Coombs, 1966; Thornton, 1979). Blake (1968) and Namboodiri (1970), on the other hand, criticize Becker's model for ignoring the indirect or 'opportunity costs' of childbearing. Blake (1960) suggests that "upper income persons have more attractive and diversified cousumption opportunities than those of lesser income" and that an "upper income person is normally under some social pressure to take advantage of these opportunities" (p.20). Thus the

marginal costs of an additional child, in terms of alternatives foregone, would be greater for an upper than for a lower income family. Therefore, economists have felt the need to incorporate parents' opportunity costs--in particular the wife's foregone labour market earnings--into child costs in the study of fertility differentials (Becker, 1965; Easterlin, 1969; Mincer, 1963). Mincer (1963) in estimating the relative strength of income and opportunity cost effects, concludes that the latter effect outweighs the former. Therefore, the higher the wife's earnings, the higher the price of childbearing, and consequently, the smaller family size.

The concept of income appropriate in fertility analysis is a much discussed topic. Although Becker does not clarify this, in his later work (1965) he suggests the use of 'full' or potential income as an appropriate concept for household decision making. A family's potential income is simply the income it would earn by devoting all its time and other resources to this end (Becker, 1965). Since households exchange money income for time spent in other activities, potential income does not equal actual income. Easterlin (1969) notes that potential income includes income foregone in order to engage in other activities. For example, wages foregone by a non-working mother to care for children would be included in potential income; therefore, actual income may be a poor proxy for potential income. Potential income also incorporates the idea of permanent income developed by

Friedman(1957) with reference to consumer behaviour. Some economists argue that it is not current income that is important in such long-range decisions as childbearing, but rather, anticipated income over the whole childbearing period (Easterlin, 1969; Turchi, 1975; Willis, 1973). Becker(1960), in fact, suggests that "a more complete account analysis would have to take into account the permanent income concept" (p. 227). In fertility analysis, permanent income is measured by taking actual current income at an age where income should reflect difference in lifetime earnings. Easterlin (1969) argues that the best income proxy for a man's 'lifetime' or permanent income is his income at age 35-44.

Empirical studies show some support for the potential income hypothesis. Mincer (1963) finds a positive relationship between potential family income and fertility. Potential income is simply the sum of the husband's actual full-time earnings plus the wife's estimated full-time income based on her reported earnings. Decomposing potential income, Mincer finds that the husband's income is positively related to fertility but that the wife's potential income is negatively related. Thus, inclusion of only the husband's income rather than potential family income would increase the positive income effect. Freedman and Coombs (1966) collected information from a sample of U.S. respondents on how much change they expected in their income over the next ten years and how much difference this change would make in

their present standard of living. They show that potential income is positively related to birth expectations. In an alternative approach to measuring permanent potential income, Willis (1973) estimates the husband's income at age 40, for men aged 35 to 64, on the basis of education, occupation, race, residence, labor market experience, and cohort, as reported in 1960 census. He finds a stronger negative relationship between children ever born and estimated income for age 40 than between children ever born and current income. Therefore, he concludes that his results "support the belief that a longer-run lifetime concept of income is relevant to fertility behaviour" (p.62).

Freedman (1963) introduced the concept of 'relative income' to fertility analysis. Relative income differs from other income concepts in that it combines elements of both income and tastes. Studies dealing with the relative income concept hypothesize that a relationship exists between the ratio of, or differences between, actual income and the income of the appropriate reference group and fertility. Tastes and desires for material goods and children are formed by association with this group. The hypothesis assumes that in situations where present income is high relative to maintenance of the desired standard of living of the couple's group, the expected number of children will be higher. Freedman (1963), based on 1955 GAFS data, classified the husband's actual income as high or low relative to the income expected in his age, educational and occupational

reference group. She finds the husband's relative income to be positively related to fertility.

Similar conclusions are drawn by other researchers (Bahr et al., 1975; Bean and Wood, 1974; Bernhardt, 1972; Chaudhury, 1977; Kuntz, 1965). Kuntz (1965) finds a positive relationship between relative income and fertility in most groups, except in those where husbands are in low status occupations with low education and wives who married young. Bean and Wood (1974) include both the concepts of relative and potential income in their analysis. They find that the husband's relative and potential incomes are highly correlated, making it difficult to separate their effects. When either one of the two income variables is included in regression analysis, Anglos show a significant positive effect and Blacks, a significant negative effect on fertility. Bahr et al. (1975) report that relative income has significant effect on fertility even when controlled for current income; they also note that the correlation coefficient between the two income measures is .79. Reed et al. (1975) find support for the hypothesis among both blacks and whites. Chaudhury (1977), on the other hand, shows that relative income is related more to spacing than to cumulative fertility among Canadian women.

Easterlin (1973) suggests the important role of relative economic status in determining fertility. He measures relative income based on a comparison of the current incomes of young couples and the incomes of their

parents when the couples were teenagers. In other words, he assumes that relative economic status is a function of the income and labor force experience of the sons relative to that of their fathers. He examines the fertility behaviour of couples since the 1930's in the United States. He suggests that a rise in the relative economic status of the sons, such as that which occured between 1930 and 1950, encourages earlier marriage and childbearing. Conversely, a decline in relative economic status between 1950 and 1960, discouraged marriage and childbearing. Hence, relative income is hypothesized to be positively related to fertility.

However, not all the empirical studies support the relationship between relative economic status and fertility. McDonald and Rindfuss (1978) in their examination of Easterlin's hypothesis find no significant influence of relative economic status on fertility. Thornton (1978) studied the relationship between childbearing and several different income concepts including husband's income, relative income, subjective well-being and optimism about future economic conditions, and observed no consistent evidence for the positive effect of income on fertility. Crimmins-Gardner and Ewer (1982) report that potential family and husband's relative income are not significantly related to either current or desired fertility or the timing of the first birth. However, their analysis indicates that the wife's potential and actual incomes show strong negative

relationship to fertility in comparison to the husband's income.

Despite the mixed results produced by the review of empirical findings, there is a general consensus that economic factors do account for a certain amount of variations in fertility. This is particularly true when the economic status is measured by potential or relative income rather than by current income. However, critics like Blake (1968) and Duesenberry (1960) question the direct effect of economic factors on fertility. In turn, they suggest that social institutional pressures mediate the effect of economic factors on fertility decisions. Therefore, normative constraints and social reference groups may be important in fertility decision-making. In this chapter, we will examine the contribution of economic factors to fertility decision-making.

5.1 Conceptualization of Economic Variables

As in many other studies, formulation of a given concept depends on the nature and availability of data. The Canadian Fertility Survey data provide valuable information for the creation of certain dimensions of economic status. But the information necessary to create dimensions such as 'direct costs' or potential or permanent income is not available. The measures adopted to formulate concepts for the present study are only approximate. Some may be a more valid indicator of a given concept than others. For example,

it is possible to assess the relative economic status of an individual through estimation of his income in direct relation to others in his group; but to assess the 'opportunity cost' one may require detailed information on wages foregone in order to engage in other activities such as child care. The variables considered for this study are assumed to serve not only as resources for families in the achievement of desired ends, but also as positional variables in the social structure (see pages 41-42).

It is quite evident from the review of empirical literature given in section 5.1 that relative economic status is a crucial factor in making fertility decisions. An individual's relative income is estimated as the ratio of, or difference between actual income and the income of the appropriate reference group. The latter approach is adopted here, whereby an individual's relative income is the difference between his actual income and his estimated income based on a regression of actual income on age, occupation and education. Relative income is categorized as a) high, b) medium, and c) low, using the following procedures. The estimated (predicted) income of the husband is coded into income groups similar to actual income. If the code number for the actual income is equal to the code number for estimated (predicted) income, the relative income position falls into the 'medium' category. If the code number for actual income is higher than the code number of predicted income, the relative income position falls into

the 'high' category, and, if it is lower, the related income position is considered 'low'.

Wife's income received less attention than husband's income in economic models because of mixed results produced by the former and the direct effect of the latter. On the one hand, the wife's income increases the total family resources and thus stimulates the taste for children, but on the other also increases the opportunity costs involved in rearing and bearing children. However, modern women in comparison to traditional women tend to combine the roles of mother and worker because economic stress involved in families requires both partners to work. Contribution of wife's income to families, therefore, needs to be taken into consideration in economic analysis of fertility (McVey, in Veevers, 1983). Relative income for wives is not computed in the present study due to greater percentage of missing data in wife's income (40%). Wife's actual income is used as her potential income. Husband's actual income used as a proxy for potential family income by economists, is also considered for analysis in addition to family income.

Additional proxy measures are also used to assess the financial situation of couples in making fertility decisions. These measures include couples' subjective feelings about lifetime savings and financial success. Measures of this kind will have problems since lifetime savings and feelings of financial success may themselves be influenced by family size (Freedman and Mueller, 1974).

Other measures, such as couples' financial plans for the future, and their standard of living compared to others', are also included to assess the effect of economic rationality on fertility decision-- making. The subjective measures proposed here appear to be valid indicators of the determinants of expected family size (Suter et al., 1976).

Education has different consequences for men and women with respect to the fertility process and the roles they play in relation to that process (Cain and Weininger, 1973; Cochrane, 1979; Janowitz, 1976; United Nations, 1983). Economists treat the husband's education as 'permanent income' and the wife's education as a proxy for 'opportunity cost' in studying the role of these factors in fertility analysis. These two measures are incorporated in the present model in that context, but are also used to look for the presence of any interactions.

The notion of work commitment used by researchers (Kupinsky, 1977; Pinelli, 1971; Sabol, 1974; Safilios-Rothschild, 1971, 1972) received little attention in demographic research. The rationale for using this concept is that women who work regularly are liable to develop greater commitment, and jobs they take outside the home offer alternative interests and achievments, and constrain domesticity and motherhood. The notion of commitment is measured by the number of interruptions of women in the labor force. A woman who plans to be employed after childbearing might rationally plan to limit her

childbearing-related interruptions in labor force participation by limiting the number of children she bears. She is also aware of the fact that employment interruptions will reduce her employability and wage potential. Thus, interruption cost would encourage women to have both fewer children and a closer spacing of children in order to concentrate the period of labor-force withdrawl. This is particularly true for women with higher education (Robinson, 1987). Accordingly, one can assume that women with a lower number of work interruptions are likely to have a greater commitment to work, thereby prefering to have smaller family size. There is an inherent problem in using this measure, however. Since the number of interruptions will also be affected by the number of children born, use of a single equation model for estimation would produce biased results.

Husband's occupational status is also included in the analysis as a control and as an interacting variable with other economic variables, as reported in earlier studies (e.g. Chaudhury, 1977).

The dependent variables for the analysis are current and expected family size, adjusted for age. Expected family size may be a more appropriate measure of fertility, particularly when the independent variables reflect the current economic conditions of the family. The assumption here is that individuals base decisions about future family size on existing economic constraints. Current family size, on the other hand, is an outcome of long term consequences;

therefore, subjective economic measures are also included to place the dependent and independent variables within an appropriate time frame. The effects of independent variables are adjusted for duration of marriage.

5.2 Bivariate Analysis of Economic Variables

The Pearson correlation coefficients given in table 5.1 show that some of the correlations are high enough to lead to problems of multicollinearity. The following correlations are comparatively higher than others: husband's education with wife's education (.58) and husband's occupation(.58); family income with wife's income (.57), husband's income (.77) and husband's relative income (.51); and husband's income with husband's relative income(.71). These correlations might cause problems in multivariate analysis when other variables are held constant to asses the effect of individual variables.

All the independent variables show highly significant association with current family size in the expected direction, except husband's relative income. Note also, wives' characteristics, such as income (-.23), education(-.25) and interruptions (.22) are highly associated with current family size in relation to husband or family characteristics. A similar conclusion can be reached by looking at the association between independent variables and expected family size. The magnitude of the associations, however, is smaller and the correlations of

Table 5.1 Pearson correlation coefficients for economic variables.

	AFERT	EXFERT	WEDUC	HEDUC	WINCOME	HINCOME	FINCOME	HR	HOCCU	STDLIVNG	SAVING
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.2532 (3674) P= .000	-.1739 (3607) P= .000	-.2304 (2236) P= .000	-.0323 (2891) P= .041	-.1615 (2878) P= .000	.0211 (2802) P= .132	-.1193 (3577) P= .000	.0430 (3646) P= .005	-.1374 (3546) P= .000
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.1617 (3658) P= .000	-.1144 (3591) P= .000	-.1587 (2230) P= .000	-.0559 (2882) P= .001	-.1280 (2869) P= .000	-.0004 (2794) P= .492	-.0903 (3562) P= .000	.0182 (3632) P= .136	-.1095 (3532) P= .000
WEDUC	-.2532 (3674) P= .000	-.1617 (3658) P= .000	1.0000 (3680) P= .	.5796 (3614) P= .000	.4172 (2241) P= .000	.2232 (2894) P= .000	.3441 (2880) P= .000	.0616 (2807) P= .001	.3772 (3583) P= .000	.0129 (3652) P= .217	.1276 (3553) P= .000
HEDUC	-.1739 (3607) P= .000	-.1144 (3591) P= .000	.5796 (3614) P= .000	1.0000 (3614) P= .	.2544 (2208) P= .000	.3412 (2869) P= .000	.3467 (2851) P= .000	.0115 (2807) P= .272	.5752 (3529) P= .000	-.0323 (3592) P= .026	.1620 (3495) P= .000
WINCOME	-.2304 (2236) P= .000	-.1587 (2230) P= .000	.4172 (2241) P= .000	.2544 (2208) P= .000	1.0000 (2241) P= .	.2008 (1880) P= .000	.5671 (1894) P= .000	.0770 (1825) P= .000	.1933 (2195) P= .000	-.0748 (2230) P= .000	.0802 (2193) P= .000
HINCOME	-.0323 (2891) P= .041	-.0559 (2882) P= .001	.2232 (2894) P= .000	.3412 (2869) P= .000	.2008 (1880) P= .000	1.0000 (2895) P= .	.7682 (2807) P= .000	.7109 (2807) P= .000	.3981 (2834) P= .000	-.1351 (2884) P= .000	.2134 (2825) P= .000
FINCOME	-.1615 (2878) P= .000	-.1280 (2869) P= .000	.3441 (2880) P= .000	.3467 (2851) P= .000	.5671 (1894) P= .000	.7682 (2807) P= .000	1.0000 (2881) P= .	.5114 (2725) P= .000	.3591 (2819) P= .000	-.1478 (2867) P= .000	.2055 (2813) P= .000
HR	.0211 (2802) P= .132	-.0004 (2794) P= .492	.0616 (2807) P= .001	.0115 (2807) P= .272	.0770 (1825) P= .000	.7109 (2807) P= .000	.5114 (2725) P= .000	1.0000 (2807) P= .	-.0060 (2807) P= .376	-.1334 (2797) P= .000	.1127 (2741) P= .000
HOCCU	-.1193 (3577) P= .000	-.0903 (3562) P= .000	.3772 (3583) P= .000	.5752 (3529) P= .000	.1933 (2195) P= .000	.3981 (2834) P= .000	.3591 (2819) P= .000	-.0060 (2807) P= .376	1.0000 (3584) P= .	-.0434 (3567) P= .005	.1579 (3461) P= .000
STDLIVNG	.0430 (3646) P= .005	.0182 (3632) P= .136	.0129 (3652) P= .217	-.0323 (3592) P= .026	-.0748 (2230) P= .000	-.1351 (2884) P= .000	-.1478 (2867) P= .000	-.1334 (2797) P= .000	-.0434 (3567) P= .005	1.0000 (3652) P= .	-.1444 (3527) P= .000
SAVING	-.1374 (3546) P= .000	-.1095 (3532) P= .000	.1276 (3553) P= .000	.1620 (3495) P= .000	.0802 (2193) P= .000	.2134 (2825) P= .000	.2055 (2813) P= .000	.1127 (2741) P= .000	.1579 (3461) P= .000	-.1444 (3527) P= .000	1.0000 (3553) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	WEDUC	HEDUC	WINCOME	HINCOME	FINCOME	HR	HOCCU	STDLIVNG	SAVING
FSUCCESS	-.0452	-.0110	.0444	.0871	.0728	.2232	.2156	.1575	.1246	-.2875	.2404
	(3668)	(3652)	(3673)	(3607)	(2238)	(2890)	(2876)	(2802)	(3578)	(3647)	(3547)
	P= .003	P= .253	P= .004	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000
FNCLPLAN	-.0837	-.0566	.1045	.1126	.0676	.0849	.0864	.0611	.0779	-.1259	.2046
	(3671)	(3656)	(3676)	(3610)	(2239)	(2893)	(2880)	(2805)	(3580)	(3650)	(3549)
	P= .000	P= .000	P= .000	P= .000	P= .001	P= .000	P= .000	P= .001	P= .000	P= .000	P= .000
INTERUPT	.2177	.1524	-.1675	-.0764	-.2370	.0353	-.2300	.0429	.0008	.0308	-.0475
	(3674)	(3659)	(3680)	(3614)	(2241)	(2895)	(2881)	(2807)	(3584)	(3652)	(3553)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .029	P= .000	P= .012	P= .480	P= .031	P= .002

	FSUCCESS	FNCLPLAN	INTERUPT
FSUCCESS	1.0000	.1605	.0011
	(3674)	(3672)	(3674)
	P= .	P= .000	P= .474
FNCLPLAN	.1605	1.0000	-.0256
	(3672)	(3677)	(3677)
	P= .000	P= .	P= .061
INTERUPT	.0011	-.0256	1.0000
	(3674)	(3677)	(3681)
	P= .474	P= .061	P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

standard of living and financial success are not significant. It is interesting to note that husband's relative income (although not significant) shows a positive association with current and negative association with expected family size.

Table 5.2 presents the unadjusted and adjusted deviations for current family size. Eta values indicate that husband's income, husband's relative income, financial success, financial planning and standard of living are least important in explaining variation in current family size.

Educational attainment of husband and wife shows a linear inverse relationship with fertility. The range of .69 and .98 for husband and wife respectively, reveals the stronger effect of the latter than of the former. Adjustment for duration of marriage results in the greatest reduction in mean number children for 0-8 years of education. This means, then, that even when the fertility measure is adjusted for age, a substantial portion of variation remains among individuals belonging to this educational group (0-8 yrs) in terms of duration of marriage. In other words, the age at marriage is quite different among couples in this educational category.

It is also evident from table 5.2 that wife's income and family income exert stronger influence on fertility than husband's current and relative incomes. The first three measures show fairly clear inverse relationship with fertility while the relationship of husband's relative

Table 5.2 Unadjusted and adjusted deviations for current family size(net age) by economic variables.

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
WEDUC	(Grand mean=.05)				
1. 0-8 years	308	.56	.48	.21	.000
2. 9-12 years	1672	.12	.11		
3. 13-15 years	925	-.18	-.16		
4. 16+ years	477	-.42	-.40		
WINCOME	(Grand mean=.05)				
1. LE 7000	538	.18	.16	.26	.000
2. 7100-12000	469	-.07	-.07		
3. 12100-19000	500	-.28	-.26		
4. 19100+	524	-.60	-.58		
5. Missing	1352	.29	.28		
HINCOME	(Grand mean=.05)				
1. LE 19000	611	.07	.11	.05	.072
2. 19100-26000	683	.01	.04		
3. 26100-35000	709	-.04	-.04		
4. 35100+	675	-.10	-.14		
5. Missing	705	.07	.03		
FINCOME	(Grand mean=.05)				
1. LE 25000	636	.26	.30	.17	.000
2. 25100-35000	685	.06	.08		
3. 35100-49000	660	-.11	-.10		
4. 49300 +	678	-.34	-.36		
5. Missing	726	.13	.09		
HRELINCOME	(Grand mean=.05)				
1. Low	1378	-.03	-.01	.03	.470
2. Medium	232	-.07	-.08		
3. High	999	.01	.02		
4. Missing	775	.05	.02		
STDLIVING	(Grand mean=.05)				
1. Better	1131	-.03	-.02	.05	.019
2. Same	2074	.00	-.01		
3. Worse	153	.26	.26		

.....cont

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
HOCCUP	(Grand mean=.05)				
1. Farmer	157	.71	.68	.19	.000
2. Blue collar	1611	.15	.15		
3. White collar	1539	-.23	-.23		
HEDUC	(Grand mean=.05)				
1. 0-8 years	385	.41	.32	.17	.000
2. 9-12 years	1520	.08	.08		
3. 13-15 years	694	-.11	-.08		
4. 16+ years	728	-.28	-.27		
SAVING	(Grand mean=.05)				
1. Never	788	.29	.29	.15	.000
2. Time to time	1174	.00	.00		
3. Regular basis	1300	-.17	-.17		
FINSUCESS	(Grand mean=.05)				
1. Not been successful	131	.27	.28	.06	.004
2. Reasonably successful	2333	.02	.02		
3. Very succes-sful	914	-.09	-.08		
FNCLPLAN	(Grand mean=.05)				
1. Never	96	.44	.38	.09	.000
2. Rarely	303	.12	.10		
3. Occasionally	1090	.08	.08		
4. Most of time	1892	-.09	-.08		
INTERUPT	(Grand mean=.05)				
1. Ever worked	478	-.37	-.35	.21	.000
2. 1-2 times	1224	-.18	-.16		
3. 3-9 times	1378	.16	.14		
4. Never worked	304	.57	.56		

income (although not significant) is unclear. There is an indication, however, that the mean number of children seems to be higher for husbands with higher relative income. When adjustment for age is not made, the current family size is 1.90, 1.96 and 1.97 for low, medium and high relative income groups respectively. Cross-tabular analysis (not shown) of husband's income by his relative income revealed that lower relative income generally corresponds to lower income of husband (79%), and higher relative income to higher income of husband (88%). The percentages within parentheses are calculated by dividing husbands' income less than and greater than 26,000 dollars. It translates, then, from our data that husbands in higher income group are likely to have more children if their income is higher than their reference group income. The missing values category also provides some interesting results, indicating that individuals in these categories are likely to have more children. A careful examination of these individuals reveals that they possess the characteristics of lower socioeconomic status.

The effects of standard of living do not support the point made earlier. That is, even if the couples' standard of living is comparatively better than others', they may not prefer to have more children, as revealed by relative income. On the contrary, couples who feel their standard of living is worse than others' have more children. It is quite possible, however, that individuals feeling bad about their standard of living might have reached that stage by having

more children. So, one might ask what the dependent variable should be in this regard.

The subjective assessment of financial situations (savings, financial success, financial planning) by couples shows the expected inverse relationship with fertility. Couples who save money on a regular basis, who feel financially successful, and who make financial plans for the future are likely to have smaller family size than their counterparts. Among these three measures, savings best explain variation in fertility. Commitment to work, measured by the number of interruptions, shows that women working continuously without any interruptions are likely to have a lower number of children than women who have never worked. The range for this variable is .94, which is the second strongest effect observed among the economic variables considered for this analysis. The influence of commitment to work on fertility remains stronger even after adjustment is made for duration of marriage.

The husband's occupational status, used here as a control, shows the expected inverse relationship with fertility. Farmers and blue collar workers have .71 and .15 more children respectively. White collar workers, on the other hand, have an average of .23 fewer children.

Similar analysis for expected family size given in table 5.3 does not diverge significantly from findings reported in table 5.2 for current family size. However, husband's relative income is negatively (although not

Table 5.3 Unadjusted and adjusted deviations for expected family size(net age) by economic variables.

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
WEDUC	(Grand mean=.03)				
1. 0-8 years	308	.48	.44	.14	.000
2. 9-12 years	1672	.02	.02		
3. 13-15 years	925	-.09	-.08		
4. 16+ years	477	-.22	-.20		
WINCOME	(Grand mean=.03)				
1. LE 7000	538	.09	.07	.19	.000
2. 7100-12000	469	-.07	-.07		
3. 12100-19000	500	-.18	-.17		
4. 19100+	524	-.43	-.42		
5. Missing	1352	.22	.22		
HINCOME	(Grand mean=.03)				
1. LE 19000	611	.10	.12	.06	.007
2. 19100-26000	683	.00	.02		
3. 26100-35000	709	-.05	-.05		
4. 35100+	675	-.12	-.14		
5. Missing	705	.08	.06		
FINCOME	(Grand mean=.03)				
1. LE 25000	636	.20	.22	.14	.000
2. 25100-35000	685	.01	.02		
3. 35100-49000	660	-.09	-.08		
4. 49300 +	678	-.27	-.28		
5. Missing	726	.15	.13		
HRELINCOME	(Grand mean=.03)				
1. Low	1378	.00	.00	.04	.193
2. Medium	232	-.05	-.06		
3. High	999	-.04	-.04		
4. Missing	775	.08	.06		
STDLIVING	(Grand mean=.05)				
1. Better	1131	-.01	.00	.04	.124
2. Same	2074	-.01	-.01		
3. Worse	153	.20	.20		

cont.....

Var.category	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
HOCCUP	(Grand mean=.03)				
1. Farmer	157	.70	.69	.16	.000
2. Blue collar	1611	.09	.09		
3. White collar	1539	-.17	-.17		
HEDUC	(Grand mean=.03)				
1. 0-8 years	385	.34	.30	.11	.000
2. 9-12 years	1520	.02	.02		
3. 13-15 years	694	-.05	-.04		
4. 16+ years	728	-.16	-.16		
SAVING	(Grand mean=.03)				
1. Never	788	.24	.24	.12	.000
2. Time to time	1174	.00	.00		
3. Regular basis	1390	-.14	-.14		
FINSUCESS	(Grand mean=.03)				
1. Not been successful	131	.21	.22	.03	.148
2. Reasonably successful	2333	-.01	-.01		
3. Very succes-sful	914	-.02	-.02		
FNCLPLAN	(Grand mean=.03)				
1. Never	96	.33	.30	.08	.000
2. Rarely	303	.05	.03		
3. Occasionally	1090	.09	.09		
4. Most of time	1892	-.08	-.07		
INTERUPT	(Grand mean=.03)				
1. Ever worked	478	-.27	-.26	.15	.000
2. 1-2 times	1224	-.09	-.08		
3. 3-9 times	1378	.07	.06		
4. Never worked	304	.47	.46		

significantly so), related to expected family size. The average expected number of children for husbands belonging to the relative income categories of low, medium, and high are 2.43, 2.39 and 2.35 respectively.

By way of a conclusion to this section, it is safe to say that wife's characteristics, such as education, income and interruptions, excel in their influence on current family size in relation to husband's characteristics. The exceptions to this generalization, however, are husband's education and occupation. The subjective measures used in assessing couples' financial status are less important in explaining variation in fertility. Similar conclusions are drawn from the analysis of expected family size. Husband's relative income (although not significant) exerts negative influence on expected family size and positive influence on current family size.

5.3 Multivariate Analysis of Economic Variables

The preliminary analysis indicated that husband's education, husband's income, and family income are highly correlated with other variables. Therefore, they are eliminated in studying the independent effect of variables in the model. Analysis of the remaining variables revealed the presence of eight possible interactions. The following interactions are statistically significant (F values are in brackets): wife's education with savings (.031); husband's relative income with his occupation (.029); standard of

living with wife's education (.008), savings (.000), wife's income (.024), husband's relative income (.017), interruptions (.022), and husband's occupation (.074). A careful examination of these interactions suggested that the first two interactions (wife's education by savings; husband's relative income by his occupation) are due merely to a statistical artifact of missing values. These two interactions are ignored for further analysis. Of the remaining six interactions, standard of living emerged as a common factor, this finding in turn led to an analysis of the effect of economic variables within the three levels of standard of living.

Table 5.4 presents unadjusted and adjusted deviations for different levels of standard of living and for all three levels combined. The beta weights given in the last row for each variable show the relative importance of each variable when controlled for the remaining variables in the model. The beta weights for the third level ('worse') are noticeably higher than for the other two. This implies that the economic variables in the model seem to be very important in explaining variation for this category when other factors are held constant (R^2= .403). However, caution should be taken in interpreting these effects since some of the cells have smaller frequencies.

From the examination of the effects of wife's characteristics such as education, income and interruptions across different levels of standard of living, it is evident

Table 5.4 Unadjusted and adjusted deviations in current family size(net age) by economic variables within different levels of standard of living.

Variable	BETTER (Grand mean=-.01) N	Unadj.	Adj	SAME (Grand mean=.04) N	Unadj.	Adj	WORSE (Grand mean=.35) N	Unadj.	Adj	ALL LEVELS COMB. N	Unadj.	Adj
WEDUC												
1. 0-8 years	112	.65	.40	150	.41	.21	17	.12	-.23	279	.49	.26
2. 9-12 years	536	.15	.10	973	.09	.03	71	.35	.20	1579	.12	.06
3. 13-15 years	277	-.31	-.22	553	-.08	-.01	42	-.51	-.14	872	-.17	-.09
4. 16+ years	147	-.47	-.25	292	-.38	-.19	12	-.40	-.37	452	-.41	-.20
Eta/beta		.27	.16*		.17	.08*		.23	.12		.20	.10*
WINCOME												
1. LE 7000	170	.04	-.01	309	.18	.13	35	.85	.56	514	.19	.13
2. 7100-12000	152	-.02	-.03	281	-.06	-.03	12	-.48	-.36	445	-.06	-.05
3. 12100-19000	165	-.25	-.11	293	-.23	-.18	19	-.74	-.46	477	-.26	-.17
4. 19100 +	186	-.57	-.30	307	-.60	-.44	11	-.26	-.36	504	-.59	-.39
5. Missing	400	.36	.20	777	.27	.20	65	-.11	-.04	1242	.28	.19
Eta/Beta		.27	.14*		.27	.20*		.31	.21		.26	.17*
HRELINCOME												
1. Low	411	.02	.00	842	-.07	-.02	83	.23	.27	1337	-.02	.00
2. Medium	71	-.26	-.12	145	.10	.15	9	-.37	-.06	224	-.03	.06
3. High	406	-.04	.03	554	.06	.08	17	-.47	-.51	977	.00	.05
4. Missing	184	.15	-.02	427	.02	-.11	33	-.25	-.41	644	.05	-.10
Eta/Beta		.08	.03		.05	.07*		.17	.20*		.02	.04*
HOCCU												
1. Farmer	38	1.04	.78	104	.55	.42	8	.15	.09	150	.66	.53
2. Blue collar	525	.13	.02	940	.13	.06	81	.30	.20	1546	.14	.06
3. White collar	510	-.21	-.08	923	-.20	-.11	53	-.49	-.33	1486	-.22	-.11
Eta/Beta		.21	.13*		.18	.11*		.22	.15		.19	.12*

cont...

Variable	BETTER (Grand mean=-.01) N	Unadj.	Adj	SAME (Grand mean=.04) N	Unadj.	Adj	WORSE (Grand mean=.35) N	Unadj.	Adj	ALL LEVELS COMB. N	Unadj.	Adj
SAVING												
1. Never	204	.25	.13	473	.34	.27	84	-.10	-.14	761	.29	.18
2. Time to time	362	.12	.06	752	-.04	-.04	31	-.36	-.36	1145	.00	-.02
3. Reg. basis	506	-.19	-.09	742	-.18	-.13	27	.74	.85	1275	-.17	-.09
Eta/Beta		.15	.07*		.18	.14*		.22	.25*		.15	.09*
FINSUCESS												
1. Not been sucessful	11	1.53	1.03	56	-.18	-.25	52	.33	.07	117	.34	.09
2. Reasonalbly successful	618	.05	.01	1497	.02	.01	79	-.17	-.02	2193	.02	.01
3. Very successful	443	-.11	-.04	415	-.04	.01	11	-.29	-.15	868	-.09	-.03
Eta/Beta		.14	.09*		.03	.04		.15	.04		.07	.02
FNCLPLAN												
1. Never	22	.20	-.05	57	.13	.02	13	2.01	1.39	92	.44	.25
2. Rarely	78	.16	.10	171	.07	-.03	30	-.17	-.27	279	.09	-.01
3. Occasionaly	292	.08	.02	685	.07	.05	41	-.13	-.03	1017	.07	.03
4. Most of time	680	-.06	-.02	1055	-.06	-.03	58	-.27	-.15	1793	-.07	-.03
Eta/Beta		.07	.03		.06	.03		.38	.26*		.09	.04
INTERUPT												
1. Ever worked	147	-.29	-.13	294	-.36	-.18	14	-.42	-.22	455	-.34	-.17
2. 1-2 times	411	-.24	-.10	705	-.14	.00	44	-.30	-.20	1160	-.18	-.05
3. 3-9 times	414	.18	.06	810	.17	.02	63	-.22	-.12	1288	.15	.02
4. Never worked	99	.64	.35	158	.43	.24	21	1.61	.95	278	.60	.39
Eta/Beta		.23	.11*		.20	.08*		.39	.23		.22	.11*
R Square			.156			.131			.403			.128

that although their associations with fertility are strong (shown by eta values), adjustment for the effects of other variables reduces the importance of these variables considerably, as shown by the beta values. Wife's education is inversely related to fertility among the respondents who felt their standard of living is 'better' or 'the same' in comparison to others in similar age groups. Note also, for these two levels, adjustments result in a substantial reduction in mean number of children for women with 0-8 years of education, while that for women with 16 or more years of education result in increasing the mean number of children. In all these cases, the adjustments involve .20 or more children. A similar case arises, when the analysis is carried by combining all three levels, i.e. when adjustment is made for standard of living in addition to other variables in the model. For the third level ('worse') neglecting the cases with sample sizes less than 20 provides a similar pattern; however, education is not related to fertility for this group of women.

The relative importance of wife's income increases with the level of standard of living. The relationship between wife's income and fertility is inverse, but significant only for the first two levels. Once again, adjustments for other variables result in significant increase in average number of children at higher income levels. Despite such an increment, the average number of children is still lower than the grand mean for these two levels.

The wife's commitment to work exhibits greater reduction in deviation once the adjustments are made for other variables; reduction is more than half in most cases. The effect is still stronger for the two extreme groups, i.e. 'ever worked' and 'never worked'. For the former the effect is to reduce, while for the latter the effect is to increase, the average number of children. This is in conjunction with the findings based on all three levels combined or adjusted for standard of living.

With regard to husband's relative income and husband's occupation, the former exerts significant influence on fertility for the last two categories, while the similar influence for the latter appears to be true for the first two categories of standard of living. The beta weights indicate that husband's occupation seems to be considerably more important than husband's relative income in explaining variation in current family size. No clear pattern emerges in relative income when adjustments are made for other variables. In other words, the relationship with fertility is non-linear within the three levels of standard of living. Among respondents viewing their standard of living as 'better' than that of others in the same age groups, medium relative income groups tend to have a lower average number of children; for respondents viewing their standard of living as 'the same', relative income shows positive relationship to fertility; for respondents viewing their standard of living as 'worse' the relative income is

inversely related to fertility. The effects of missing value categories show that the average number of children would be lower once adjustments were made for other variables. In general, this finding provides some support for the positive relationship between relative income and fertility observed in earlier studies.

The husband's occupational status is inversely related to fertility. Farmers and blue collars have more children than white collar workers. The real contrast, however, exists between farmers and white collars. The difference in average number of chidren are .86 and .53 for 'better' and 'same' categories of standard of living respectively.

Subjective measures, such as savings, financial success and financial planning, provide some interesting results. Among these three measures savings appear to have significant influence on family size in all three levels of standard of living, while the remaining two measures are significant in only one of the three levels. Even those significant effects for the latter measures may be due largely to greater deviation shown by cases with smaller sample size, particularly for the variable financial success. Paradoxically, respondents who feel their standard of living is 'worse' and save money on a regular basis have more children. This supports the speculation, made earlier, that couples might have reached this attitude toward their standard of living by having more children and being forced to save money on a regular basis. This notion is also to

some extent supported by a closer examination of couples' financial plans. Those who seldom make any financial plans are likely to have fewer children than couples making financial plans most of the time. These two measures (savings and financial planning) appear to be more important in explaining variation in fertility among the respondents feeling 'worse' about their living standard.

To summarize the results of multivariate analysis, it is adequate to say that economic variables are relatively more important in explaining variation in fertility, particularly among the respondents who feel their living standard is comparatively 'worse' than others' (R^2=.403). Even after adjustments made for other variables, wife's characteristics, such as income, education, and interruptions, continue to play an important role in explaining variation in family size. This is found to be true even when the missing values are omitted in multiple regression analysis. On the other hand, if we consider husband's characteristics, such as relative income and occupational status, the latter appears to be more important in explaining variation in fertility. The subjective measures, in general, are seen to be least important in the economic analysis of fertility (except savings).

In conclusion to this chapter, we could say that economic determinants are relatively more important than the structural determinants analysed in chapter 4. However, the variations by the economic variables are not sufficient to

be identified as the primary determinants of fertility. In general, variables dealing with wife's characteristics make a more substantial contribution in explaining variation in current family size than do other variables. This is not surprising, given the fact that the decision about the particular number of children has a greater impact on her and that she frequently has greater control over the final outcome. Moreover, wives' reports about their partners' characteristics are likely to be erroneous. For example, studies demonstrate that women's reports about their partners do not agree with reports from the men themselves. In some cases, the discrepancies between men's and women's reports of the same event are overwhelming (Beckman, 1980; Heer, 1962; Kenkel, 1957; Nathanson, 1977; Saflio's-Rothschild, 1969). Husband's relative income, used successfully in many studies to ascertain variation in family size, appears to be less important in the present study. Although there is some support for the positive relationship between relative income and fertility, the pattern is not clear. There is also some indication that subjective measures, particularly savings and financial planning, at higher levels tend to increase the average number of children for respondents who feel their living standard is 'worse' than others'. This inturn leads us question the validity of the approach, suggested by Freedman (1963), of using subjective measures as a cause rather than as a consequence. Overall, the traditional economic

variables such as education, income, occupation etc., produce the expected relationship to fertility, while for the subjective measures the evidence is less than conclusive.

Chapter 6

SOCIOPSYCHOLOGICAL AND BIOLOGICAL DETERMINANTS OF FERTILITY

Researchers studying the determinants of fertility in recent years have devoted very little attention to sociopsychological determinants of fertility. The role of psychological factors in fertility analysis has been criticised and underestimated. Mauldin (1965) cogently suggests that "significant relationships between psychological factors and fertility have not been found" and "perhaps such relationships do not exist" (p. 9). Other researchers hold similar opinions (Bumpass and Westoff, 1970; Kiser and Whelpton, 1958; Whelpton et al., 1966). Lack of success by these researchers may be attributed more to the procedures used to collect data than to any actual failure of psychological variables (Bagozzi and Van Loo, 1978). Moreover, psychological variables are contaminated by greater amounts of measurement errors, and the methods adopted by these researchers fail to take this factor into account.

Nevertheless, given that structural explanations are insufficient and concomitant with the inadequate explanation by economic factors, one needs to focus on sociopsychological determinants to understand fertility phenomena. After all, fertility is a relatively private matter, and what goes on in couples' minds regarding the numbers they want can be explained in terms of psychological determinants by constraining the environmental factors. As

Grindstaff (in Veevers, 1983) rightly points out, "to account for the future variations in fertility, one of the most fruitful areas for investigation is at the micro-level of the social psychological factors associated with individual decision-making. Exactly which components are relevant is not at all obvious, but many potential dimensions could be suggested" (p. 30).

In this chapter an attempt is made to construct sociopsychological concepts in order to study the determinants of fertility. The rationale for including biological factors is that, apart from the obvious link between psychology and biology, these factors combined also form an intermediate component of the causal model that will be discussed in the next chapter.

As mentioned earlier, researchers, until recently, have been quite skeptical about the role of sociopsychological factors in fertility; as a result only a handful of studies is available in this area. Even the studies available on this matter are rudimentary in terms of developing psychological concepts necessary to study fertility. However, the focus here will be on two sociopsychological dimensions that have received much attention in demographic research. These are gender or sex roles and the value of children.

Role theory used in sociological research, in general, takes the pattern of relationship among people in groups as the unit of analysis (Jackson, 1972). However, for role

theorists involved in fertility research, the family is the most important unit of analysis. Rainwater (1960, 1965) is the first person to document the impact of the nature of marital relationship on fertility. He finds that psychological needs and motivational factors have an influence on family size. For lower class fathers, children are seen as an important source of self-esteem. For lower class mothers, having children provides feelings of accomplishment and pride. He also finds that couples who experience mutuality in their marriage tend to use more effective contraception. As well, he observes a strong (positive) association "between family size desires and how exclusively the wife sees herself as oriented to husband and outside interests as opposed to children"(Rainwater, 1965:191).

Although many researchers have suggested the possible link between marital role relationships and fertility control (Hass, 1972; Hoffman and Wyatt, 1960; Scanzoni and McMurry, 1972), very little research has examinined these effects. Most research focuses on female role definitions. Tobin (1976), for example, operationalizes female role definition through attitudes toward career, housework, child-care etc. and finds that it varies with education. He also reports that wives who view their role primarily as domestic tend to use less contraceptives than those who have modern orientations.

Scanzoni (1975, 1976) is one of the few researchers to study the effect of marital structure on fertility by taking the joint role of husband and wife as the unit of analysis. Using correlational and regression analysis, he finds that sex-role modernity is positively related to age at marriage, current full-time employment of the wife and use of contraceptives. It is negatively related to the number of children intended. In his 1976 work, he attempted to study the relationship between gender roles and the process of fertility control. More specifically, he incorporated egalitarianism into the joint gender role definition. He finds that egalitarianism is determined by the family of orientation. While the degree of egalitarianism for husbands is influenced by education and father's socioeconomic status, for wives it is determined by education, father's and mother's education, and father's socioeconomic status. By combining the individual reponses of husband and wife with regard to joint role relationships, Scanzoni finds that in addition to background characteristics, desired and intended number of births is inversely related to sex-role egalitarianism. Thus, he concludes that the more modern and equal the relationship between husband and wife, the lower the desired and intended family size.

Bagozzi and Van Loo (1978, 1980) study fertility behaviors as a process of social exchange or influence occuring within the family. The model developed by them takes the husband and wife relationship as the unit of

analysis and emphasizes the couple's interactions. The social exchange is measured by the degree of gender role egalitarianism between husband and wife. Bagozzi and Van Loo also find that "the more the husband and wife desire the rewards associated with egalitarian marriages , the less they will desire the benefits that accompany additional children and the smaller will be their desired and intended family size" (p. 119). Further, the educational status of husband and wife influences fertility only through its effect on gender role egalitarianism.

Despite such an established relationship between sex roles and fertility, some researchers question the validity of causal direction. Turner and Simmons (1977), for example, argue that fertility may in fact influence access to and attitudes toward 'modern' roles options for women, and this may explain the correlation between sex role attitudes and fertility. They further argue that sex role attitudes and behaviours may be influenced by fertility, but that this influence may be negligible. Their analysis testing this causal direction reveals that sex role attitudes influence fertility and not vice versa. They also report that the value of children (measured by 8 items dealing with the positive aspect of children), is positively correlated with the number of children ever born. A large group of mothers with high value of children scores and traditional role standards favor relatively large families. Also, a smaller group of mothers, who surprisingly combine high value of

children scores with modern role standards want even more children. A similar observation is made by Hobart (1981). He finds that Francophone women prefer larger families because of a liberal pattern that includes egalitarian attitudes.

Another factor often involved in the fertility decision-making process is the value of children to parents. Parents' perceptions of the costs and benefits of children and the value they attach to these costs and benefits constitute their general attitude toward having children. The value of children to parents may be economic or psychological. A great deal of research has been devoted to identifying and measuring the perceived costs and benefits (both economic and noneconomic) of children (Arnold et al., 1975; Bulatao, 1981; Fawcett, 1972; Hoffman and Hoffman, 1973). Studies based on developed countries (eg. Fawcett, 1972) report that respondents on the benefit side see children as providers of love and companionship, as a source of fun and excitement, or simply as a unique experience in one's life and as a bond between husband and wife. On the negative side (cost), children place constraints on one's freedom and flexibility, cause heavy financial burden; and create stress between husband and wife. However, the costs and benefits of children vary according to parities of women. In other words, early childbearing is governed by normative forces and social constraints that exclude a free, rational calculation of costs and benefits by the couple, whereas later childbearing does become subject to rational

calculation (Bulatao, 1981; Fawcett et al. 1972). In general, whatever increases the cost of rearing children or reduces the benefit of children oprerates to reduce fertility, whereas whatever increases the benefit of children or reduces the cost of children operates to increase fertility. Bulatao and Fawcett (1983), however, argue that not all values (benefits) relate to fertility positively; nor do all disvalues (costs) relate to it negatively.

6.1 Formulation of Sociopsychological Concepts

The two concepts be used in this chapter are gender role egalitarianism and value of children. These concepts have been formulated by means of various indicators available in the Canadian Fertility Survey. Some of these indicators (questions) have been used in earlier studies to construct similar concepts.

Gender role egalitarianism is measured in terms of the actual sharing of housework and childcare by the couples. The actual question and response categories used for this item are "Who does the cooking, housework etc. (1) always you... 2) mostly you... 3) equally ... 4) mainly partner." About six different questions are used to assess gender role egalitarianism (Q702a, Q702b, Q703a, Q703b, Q703c, and Q910). Although one could compute a composite index for gender role egalitarianism based on responses to these questions, studies report (Presser, 1977) a disparity in the

sharing of certain activities between husband and wife. For this reason, we analyse the responses to each question separately. In situations where the respondents did not respond to a question their attitudes toward sharing such activities are substituted (Q218, Q219). The preliminary analysis of data with this substitution did not affect the results significantly; therefore, they are retained in the analysis to reduce the number of missing cases. However, one of the limitations in using this measure is that the gender role egalitarianism in a way depends upon the number of children, but this effect is comparatively weaker (eg. Turner and Simmons, 1977). The effect of egalitarianism will be examined within different levels of relative occupational status in order to verify Davis's (1984) claim. According to him one way to remedy the weakness of the egalitarian system is to equalize the rights and obligations of the two sexes in both the workplace and the home. If women achieve a higher position in the workplace, men will be able to share half the burden at home. To him, as long as husband and wife are unequal in the labor market, they will inevitably be unequal at home, and the one who contributes less by employment will contribute more at home. In order to verify this theory we need to relate the wife's occupational status to her husband's. Wife's occupational statuses are coded similarly to husband's and then divided into three groups; low, medium and high in relation to husband's occupational status.

The second concept, value of children, is measured by the respondents' subjective feeling of rewards and costs associated with having children. More specifically, respondents were asked whether they strongly agree, agree, disagree, or strongly disagree with statements such as 'having a child provides happiness or a goal in life etc.,' in order to assess the benefits; and statements such as 'having children distance the spouses' or 'becoming parents means heavy responsibility,' in order to assess the costs having of children These indicators are in a way similar to the ones used by previous researchers. The subjective attitudes toward benefits or costs associated with having children also vary according to women's labor force status. Hence, the influence of subjective benefits and costs of having children will be examined within the level of current labor force status. This would enable us to understand whether the taste for children varies with current labor force participation. Since the variables used to measure the value of children are attitudinal, some women may base their opinions on past experience while others may draw purely on hypothetical situations. To circumvent this problem adjustment is also made for the period of exposure to childbearing (DURMAR).

6.2 Bivariate Analysis of Sociopsychological Factors

Table 6.1 presents the Pearson correlation coefficients for various sociopsychological variables. Some of the high correlation coefficients include the associations between HOUSWORK and SHARCOOK (.49), and between CHLDCARE and CCLOTHES(.50). These correlations are not large enough to create any multicollinearity problems.

The variables measuring gender role egalitarianism (SHARCOOK, HOUSWORK, CHLDCARE, CCLOTHES, SCHLWORK, DECISION) show the expected relationship with fertility. In accordance with variable categories, lower score means 'traditional' and higher score means 'egalitarian'. The fourth category (mostly/always partners) contains relatively few cases; therefore, its effect is placed in the 'egalitarian' category. One could consider response to this category as an indicator of the 'liberal' status of women in the household. Financial decision-making, on the other hand, is traditionally done by men; therefore, for the DECISION variable a higher score indicates 'traditional' and a lower score, 'egalitarian/ liberal,' status of women.

The Pearson correlation coefficients for the above measures are statistically significant. As the egalitarianism between husband and wife increases, the current and expected number of children decreases. The variables directly related to children (CHLDCARE, CCLOTHES, SCHLWORK) have stronger association with fertility than others. Concomitantly, these variables are also strongly

Table 6.1 Pearson correlation coefficients for sociopsychological variables.

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.1158 (3674) P= .000	-.0994 (3674) P= .000	-.2859 (3674) P= .000	-.2474 (3674) P= .000	-.1320 (3670) P= .000	.0512 (3658) P= .001	-.0089 (3625) P= .296	.0269 (3673) P= .051	.0275 (3639) P= .048
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.0799 (3659) P= .000	-.0553 (3659) P= .000	-.2002 (3658) P= .000	-.1495 (3658) P= .000	-.0903 (3654) P= .000	.0446 (3644) P= .004	-.0186 (3611) P= .132	.0198 (3658) P= .115	.0114 (3625) P= .246
SHARCOOK	-.1158 (3674) P= .000	-.0799 (3659) P= .000	1.0000 (3681) P= .	.4862 (3681) P= .000	.2546 (3680) P= .000	.2123 (3680) P= .000	.1403 (3676) P= .000	-.0598 (3665) P= .000	-.0345 (3631) P= .019	-.0362 (3679) P= .014	-.0707 (3645) P= .000
HOUSWORK	-.0994 (3674) P= .000	-.0553 (3659) P= .000	.4862 (3681) P= .000	1.0000 (3681) P= .	.3164 (3680) P= .000	.2456 (3680) P= .000	.2202 (3676) P= .000	-.1100 (3665) P= .000	-.0724 (3631) P= .000	-.0747 (3679) P= .000	-.0743 (3645) P= .000
CHLDCARE	-.2859 (3674) P= .000	-.2002 (3658) P= .000	.2546 (3680) P= .000	.3164 (3680) P= .000	1.0000 (3680) P= .	.4975 (3680) P= .000	.4025 (3676) P= .000	-.0719 (3664) P= .000	-.0822 (3631) P= .000	-.0678 (3678) P= .000	-.0997 (3644) P= .000
CCLOTHES	-.2474 (3674) P= .000	-.1495 (3658) P= .000	.2123 (3680) P= .000	.2456 (3680) P= .000	.4975 (3680) P= .000	1.0000 (3680) P= .	.3824 (3676) P= .000	.0254 (3664) P= .062	-.0512 (3631) P= .001	-.0437 (3678) P= .004	-.0523 (3644) P= .001
SCHLWORK	-.1320 (3670) P= .000	-.0903 (3654) P= .000	.1403 (3676) P= .000	.2202 (3676) P= .000	.4025 (3676) P= .000	.3824 (3676) P= .000	1.0000 (3676) P= .	.0095 (3660) P= .282	-.0205 (3627) P= .108	-.0423 (3674) P= .005	-.0738 (3641) P= .000
DECISION	.0512 (3658) P= .001	.0446 (3644) P= .004	-.0598 (3665) P= .000	-.1100 (3665) P= .000	-.0719 (3664) P= .000	.0254 (3664) P= .062	.0095 (3660) P= .282	1.0000 (3665) P= .	.0535 (3617) P= .001	.0027 (3664) P= .434	-.0004 (3631) P= .491
DISTANCE	-.0089 (3625) P= .296	-.0186 (3611) P= .132	-.0345 (3631) P= .019	-.0724 (3631) P= .000	-.0822 (3631) P= .000	-.0512 (3631) P= .001	-.0205 (3627) P= .108	.0535 (3617) P= .001	1.0000 (3631) P= .	.0702 (3631) P= .000	.0405 (3603) P= .008
BURDEN	.0269 (3673) P= .051	.0198 (3658) P= .115	-.0362 (3679) P= .014	-.0747 (3679) P= .000	-.0678 (3678) P= .000	-.0437 (3678) P= .004	-.0423 (3674) P= .005	.0027 (3664) P= .434	.0702 (3631) P= .000	1.0000 (3679) P= .	.0671 (3644) P= .000
OPCOST	.0275 (3639) P= .048	.0114 (3625) P= .246	-.0707 (3645) P= .000	-.0743 (3645) P= .000	-.0997 (3644) P= .000	-.0523 (3644) P= .001	-.0738 (3641) P= .000	-.0004 (3631) P= .491	.0405 (3603) P= .008	.0671 (3644) P= .000	1.0000 (3645) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
GOAL	.1402	.1546	-.0676	-.0627	-.0781	-.0594	-.0421	.0048	-.0817	.1097	-.0186
	(3649)	(3634)	(3655)	(3655)	(3655)	(3655)	(3651)	(3641)	(3616)	(3655)	(3624)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .006	P= .386	P= .000	P= .000	P= .132
AFFECTIN	.0819	.0935	-.0348	-.0380	-.0440	-.0576	-.0330	.0178	-.1715	.1563	.0138
	(3632)	(3617)	(3638)	(3638)	(3637)	(3637)	(3633)	(3624)	(3599)	(3638)	(3616)
	P= .000	P= .000	P= .018	P= .011	P= .004	P= .000	P= .023	P= .142	P= .000	P= .000	P= .204
HAPPINES	.2059	.2379	-.0857	-.0725	-.1259	-.1141	-.0572	.0266	-.0636	.0172	.0015
	(3663)	(3648)	(3670)	(3670)	(3669)	(3669)	(3665)	(3654)	(3620)	(3668)	(3637)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .054	P= .000	P= .150	P= .465

	GOAL	AFFECTIN	HAPPINES
GOAL	1.0000	.4187	.3193
	(3655)	(3623)	(3644)
	P= .	P= .000	P= .000
AFFECTIN	.4187	1.0000	.1951
	(3623)	(3638)	(3627)
	P= .000	P= .	P= .000
HAPPINES	.3193	.1951	1.0000
	(3644)	(3627)	(3670)
	P= .000	P= .000	P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

associated among themselves. One should not be sanguine about the association of these variables with fertility, since such role relationships will also be a function of number of children in the family. Nevertheless, these measures have been used in previous research, and the results support the expected relationship with fertility.

On the other hand, the variables measuring the value of children (DISTANCE, BURDEN, OPCOST, GOAL, AFFECTION, AND HAPPINESS) produce mixed results. On the subjective cost side of children, respondents feeling that children tend to distance spouses (DISTANCE) have fewer children, while the respondents feeling that children mean heavy responsibility (BURDEN) and reduce work opportunities outside the home have more children. Among these three variables, DISTANCE is not significant (although the direction is as expected), and the other two variables (BURDEN and OPCOST) are barely significant, but the directions are not expected.

In contrast to subjective cost of children, the perceptions of subjective benefits of having children produce expected relationship with fertility. Respondents agreeing that a child provides goals, affection and happiness in life are likely to have more children. The direction of these variables are as expected and the magnitude of these coefficients is much greater than that of the coefficients for subjective cost of children.

Looking at the correlations of duration of marriage with variables representing gender role egalitarianism and

value of children provides some interesting results. Women in marriage union for a longer period of time tend to assume the traditional role in sharing household chores and childcare. These women are also more aware of the greater costs and lesser benefits associated with having children. This is not surprising, given the fact that women married for a longer period of time might have better experience of the rewards and punishments associated with having children. In the present context, the experiences of these women with children do not appear to be pleasant; the subjective costs outweigh the subjective benefits of children.

Still continuing with the bivariate analysis, table 6.2 presents the relationship between fertility and sociopsychological variables from the MCA analysis. The results are not significantly different from those of correlation analysis. Nevertheless, the effects presented for each category of the independent variables enable us to understand the relationship better. For example, the effects of supervision of children's school work and financial decision making on fertility appear to be non-linear. It is also evident that husbands/partners take very little responsibility in terms of sharing housework or taking care of children or shopping for children's clothes in relation to their participation in other activities.

In general, variables dealing with gender role egalitarianism indicate that couples in joint role relationships are likely to have a lower number of children.

Table 6.2 Unadjusted and adjusted deviations for current family size by sociopsychological variables.

Variable	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
SHARCOOK					
1. Always you	911	.11	.08	.11	.000
2. Mostly you	1825	.03	.04		
3. Equally	530	-.19	-.17		
4. Mostly partner	118	-.50	-.45		
HOUSWORK					
1. Always you	720	.11	.07	.10	.000
2. Mostly you	1711	.05	.05		
3. Equally	901	-.16	-.13		
4. Mostly partner	51	-.47	-.43		
CHLDCARE					
1. Always you	637	.40	.38	.28	.000
2. Mostly you	1402	.22	.21		
3. Equally	1328	-.42	-.41		
4. Mostly partner	17	-.12	-.10		
CHLDCLOTHES					
1. Always you	1092	.25	.23	.26	.000
2. Mostly you	1137	.20	.20		
3. Equally	1136	-.45	-.42		
4. Mostly partner	18	.39	.42		
SCHLWORK					
1. Always you	436	.32	.26	.16	.000
2. Mostly you	736	.19	.16		
3. Equally	2065	-.16	-.13		
4. Mostly partner	142	.28	.24		
DECISION					
1. Mainly women	314	.15	.14	.11	.000
2. Equally shared	2672	-.06	-.06		
3. Mostly partner	319	.27	.26		
4. Always partner	65	.51	.44		

cont.....

Variable	N	Unadj. dev	Adj. DURMAR	Eta	Sig of F
DISTANCE					
1. S. Disagree	1064	.04	.05	.04	.144
2. Disagree	1680	-.04	-.04		
3. Agree	543	.05	.05		
4. S. Agree	53	-.20	-.21		
BURDEN					
1. S. Disagree	59	-.07	-.04	.04	.206
2. Disagree	152	-.20	-.19		
3. Agree	1257	.00	.01		
4. S. Agree	1914	.02	.01		
OPCOST					
1. Not at all	454	.02	.02	.04	.079
2. Not very much	779	-.10	-.08		
3. Fair amount	1292	.01	.02		
4. A lot	826	.06	.04		
GOAL					
1. S. Disagree	187	-.56	-.57	.14	.000
2. Disagree	707	-.18	-.19		
3. Agree	1333	.07	.07		
4. S. Agree	1134	.12	.13		
AFFECTION					
1. S. Disagree	51	-.80	-.80	.10	.000
2. Disagree	434	-.15	-.18		
3. Agree	1488	.01	.01		
4. S. Agree	1370	.06	.07		
HAPPINESS					
1. Not at all impt	225	-.53	-.52	.19	.000
2. Not very impt	582	-.33	-.33		
3. Important	1026	.00	.01		
4. Very impt	1540	.21	.19		

However, there is some evidence that the couples may have a smaller family size if the activities such as cooking and housework are done mainly by the husband/partner. Probably these activities are least likely to be enjoyed by husbands. On the other hand, husbands' involvement in the supervision of children's school work and in financial decision making encourages them to have more children. Overall, the variables directly related to children are likely to explain a significant portion of variance in current family size, as shown by the eta coefficients.

Turning to the value of children, it is clear that the subjective benefits of children are linearly related to fertility, while the results are mixed for the subjective costs of children. Even adjustments for duration of marriage do not alter these relationships. This leads us to question the predictive ability of the subjective cost of children. The results from expected family size, surprisingly, were quite similar to the ones presented here and are therefore not discussed.

6.3 Multivariate Analysis of Sociopsychological Variables

Preliminary analysis of the variables associated with gender role egalitarianism did not demonstrate the presence of any significant interactions among the variables. Nonetheless, the effects of sociopsychological variables are examined within different levels of the relative occupational status of the wife for the reasons mentioned

earlier. Adjustments for duration of marriage have not produced any dramatic effect and are therefore not included in table 6.3.

First we need to examine whether or not the couples' participation in various activities differ within the levels of wife's occupational status in relation to husband's occupational status. The percentages given in table 6.3 are used for this purpose. The results from this table can be summarized as follows: 1) a greater percentage of couples participate equally in activities such as financial decision-making and supervision of children's school work. A moderate participation is observed in other activities related to children and to some extent in sharing housework and; a low participation in cooking. 2) In general, with the exception of financial decision-making and supervision of children's school work, women contribute more to all other activities. 3) Nevertheless, there is some indication that equal participation tends to increase with wife's relative occupational status; but the real increment seems to occur between low and medium categories. Surprisingly, even when the wives' occupational statuses are higher than husbands', their participation in traditional activities does not seem to decline; rather, it increases in some cases.

When the various activities are related to current family size variables such as SHARCOOK,HOUSWORK produce substantial reduction in mean number of children among the 'mostly partners' category. Even after the adjustments for

Table 6.3 Unadjusted and adjusted deviations for current family size within different levels of relative occupational status of wife by gender role egalitarianism

Variable	LOW (mean=.00) N	%	Unadj	Adj	MEDIUM (mean=-.17) N	%	Unadj	Adj	HIGH (mean=-.10) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=-.06) N	%	Unadj	Adj**
SHARCOOK																
1. Always you	426	28	.02	-.05	107	24	.08	.00	299	22	.11	.11	832	25	.06	.02
2. Mostly you	818	54	.07	.05	240	54	.09	.05	722	54	.02	-.01	1780	54	.05	.02
3. Equally	231	15	-.17	-.02	82	18	-.26	-.13	247	19	-.10	-.05	560	17	-.16	-.05
4. Mostly partner	51	3	-.47	-.30	16	4	-.57	-.12	56	4	-.38	-.25	123	4	-.45	-.24
Eta/Beta			.10	.06			.16	.07			.09	.07			.10	.05*
HOUSWORK																
1. Always you	345	23	.04	-.07	74	17	.03	-.14	233	18	-.01	-.24	652	20	.03	-.14
2. Mostly you	776	51	.06	.02	218	49	.14	.04	663	50	.06	.01	1657	50	.07	.02
3. Equally	395	26	-.14	.04	139	31	-.17	.04	396	30	-.06	.13	929	28	-.11	.08
4. Mostly partner	11	.7	-.70	-.40	13	3	-.64	-.28	32	2	-.36	-.09	56	2	-.53	-.20
Eta/Beta			.08	.04			.16	.08			.07	.11*			.09	.07*
CHLDCARE																
1. Always you	288	19	.29	.24	67	15	.46	.28	220	17	.36	.25	574	17	.34	.24
2. Mostly you	638	42	.26	.18	171	38	.33	.20	491	37	.29	.15	1300	39	.28	.18
3. Equally	593	39	-.42	-.31	206	46	-.43	-.26	606	46	-.37	-.21	1404	43	-.40	-.26
4. Mostly partner	7	.5	-.32	-.23	1	.2	1.55	1.48	8	.6	.16	.02	16	.5	.03	.06
Eta/Beta			.28	.20*			.37	.23*			.29	.17*			.30	.19*

cont...

Variable	LOW (mean=.00) N	%	Unadj	Adj	MEDIUM (mean=-.17) N	%	Unadj	Adj	HIGH (mean=-.10) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=-.06) N	%	Unadj	Adj**
CHLDCLOTHES																
1. Always you	492	32	.20	.08	123	28	.36	.15	395	30	.32	.23	1009	31	.27	.14
2. Mostly you	519	34	.23	.15	120	27	.34	.26	420	32	.25	.18	1059	32	.25	.18
3. Equally	507	33	-.42	-.23	199	45	-.43	-.25	501	38	-.47	-.34	1208	37	-.45	-.28
4. Mostly partner	8	.5	-.02	.11	3	.7	.44	.05	8	.6	.56	.39	18	.5	.29	.20
Eta/Beta			.25	.14*			.35	.21*			.32	.23*			.29	.18*
SCHLWORK																
1. Always you	193	13	.28	.09	42	9	.70	.43	159	12	.27	-.08	394	12	.33	.07
2. Mostly you	302	20	.17	-.03	74	17	.32	.00	300	23	.25	.07	676	20	.22	.01
3. Equally	953	62	-.13	-.03	311	70	-.20	-.09	833	63	-.17	-.03	2096	64	-.16	-.04
4. Mostly partner	78	5	.24	.22	18	4	.44	.47	32	2	.64	.45	128	4	.38	.29
Eta/Beta			.14	.05			.29	.16*			.20	.07*			.18	.06*
DECISION																
1. Mainly women	134	9	.04	.01	36	8	.04	-.23	131	10	-.04	-.11	302	9	.00	-.06
2. Equally shared	1191	78	-.05	-.04	373	84	-.05	-.01	1081	82	-.03	-.01	2644	80	-.04	-.03
3. Mostly partner	175	11	.33	.26	28	6	.50	.39	86	6	.16	.05	289	9	.31	.22
4. Always partner	27	2	.12	.20	7	2	.20	.18	25	2	.75	.75	59	2	.40	.40
Eta/Beta			.10	.08*			.12	.11*			.10	.10*			.10	.08*
R Square				.109				.221				.147				.130

* The effect of these variables are significant at least at .10 level

** Adjustments are made for other independent variables and relative occupational status of wife.

other variables the relationship is linear for SHARCOOK while it is nonlinear for HOUSWORK. More specifically, the adjustment reduces the mean number of children if the housework is always done by either spouse. A similar pattern emerges within the different levels of relative occupational status of wife. Note also, couples sharing household work equally are likely to have more children when other factors are taken into consideration.

The effects for the remaining variables indicate that couples in joint role relationships are likely to have a lower mean number of children than couples in segregated role relationships. Not surprisingly, the average number of children is likely to be lower among the women in medium and higher relative occupational categories, provided financial decisions are made mainly by these women. Women belonging to these two categories may have education equal to or greater than their partners, so, in a way the effects could be confounded by education. In general, controlling for other variables substantially reduces deviations among variables directly related to children (CHLDCARE, CCLOTHES, SCHLWORK). Despite such reductions, these variables exhibit stronger effect and explain greater variation in current family size. The variation (R^2) in fertility explained by all the variables in the model is equal to that explained by economic and structural variables discussed in earlier chapters.

With a few exceptions, there is a great deal of evidence that couples in joint role relationships are likely to have fewer children than those in segregated role relationships. The findings, in general, concur with those of the studies reviewed earlier. At the same time one should not be overly complacent, since there is no consistent pattern within the levels of relative occupational status of wife with regard to fertility. Also, in testing Davis's hypothesis one would anticipate that couples with egalitarian status outside the home will also participate equally at home. There is some support for this, particularly in the medium level, where the percentages for 'equal' categories are slightly higher than in the others. Nevertheless, there is a strong indication that no matter what the occupational status of wife is in relation to husband, a sizeable portion of women engage in traditional duties. However, a point should be made at this juncture. Since about 44 percent of the women are currently not working, and the occupational status used here refers only to their last occupation, one may not clearly understand the dynamics of relationship between fertility and the variables under study. To circumvent this problem we employ the couples current labor force status.

Table 6.4 is used to elucidate whether or not the one who contributes less by employment contributes more at home. There is some evidence for this relationship. When we compare the households in which only one spouse works, we

Table 6.4 Unadjusted and adjusted deviations for current family size within couples labor force status by gender role egalitarianism

Variable	BOTH SPOUSES WORK (mean=-.20) N	%	Unadj	Adj	HUSBAND ONLY WORK (mean=.33) N	%	Unadj	Adj	WIFE ONLY WORK (mean=-.05) N	%	Unadj	Adj
SHARCOOK												
1. Always you	393	23	.08	.00	448	34	.05	.06	23	15	-.32	-.32
2. Mostly you	938	54	.03	.02	753	56	.03	.02	63	41	.21	.23
3. Equally	325	19	-.07	-.00	124	9	-.27	-.23	47	31	-.20	-.09
4. Mostly partner	82	5	-.40	-.19	11	.8	-1.08	-.88	21	14	.18	-.14
Eta/Beta			.09	.04			.11	.09*			.16	.15
HOUSWORK												
1. Always you	289	17	.09	-.08	372	28	-.02	-.17	13	8	-.18	.07
2. Mostly you	848	49	.05	-.01	723	54	.03	.03	71	46	.06	-.20
3. Equally	568	33	-.09	.06	233	17	-.03	.21	58	38	-.11	.09
4. Mostly partner	32	2	-.39	-.13	7	.5	-1.37	-1.00	11	7	.39	.74
Eta/Beta			.08	.05			.08	.12*			.10	.18
CHLDCARE												
1. Always you	266	15	.39	.25	286	21	.24	.18	33	21	.14	.09
2. Mostly you	691	40	.28	.17	621	47	.11	.07	45	29	.75	.50
3. Equally	771	44	-.39	-.24	423	32	-.31	-.22	74	48	-.51	-.33
4. Mostly partner	9	.5	-.08	-.11	5	.4	-.31	-.15	2	1	-.08	-.55
Eta/Beta			.32	.19*			.18	.13*			.39	.26*

cont...

Variable	BOTH SPOUSES WORK (mean=-.20) N	%	Unadj	Adj	HUSBAND ONLY WORK (mean=.33) N	%	Unadj	Adj	WIFE ONLY WORK (mean=-.05) N	%	Unadj	Adj
CHLDCLOTHES												
1. Always you	517	30	.30	.17	468	35	.17	.10	54	35	.14	-.02
2. Mostly you	593	34	.24	.18	457	34	.10	.07	38	25	.69	.47
3. Equally	618	36	-.49	-.32	405	30	-.31	-.20	60	39	-.56	-.27
4. Mostly partner	10	.6	.41	.31	5	.4	.12	.14	1	.6	.36	-.53
Eta/Beta			.33	.22*			.16	.11*			.36	.21*
SCHLWORK												
1. Always you	204	12	.36	.03	180	13	.22	.09	24	16	.36	.22
2. Mostly you	362	21	.21	-.01	319	24	.09	.03	29	19	.78	.33
3. Equally	1062	62	-.16	-.02	792	59	-.12	-.06	96	62	-.35	-.17
4. Mostly partner	86	5	.30	.24	45	3	.51	.44	5	3	.61	.33
Eta/Beta			.19	.05			.13	.08*			.34	.16
DECISION												
1. Mainly women	159	9	.08	.02	109	8	-.01	-.03	28	18	.63	.56
2. Equally shared	1395	80	-.05	-.04	1055	79	-.04	-.04	117	76	-.13	-.12
3. Mostly partner	155	9	.29	.22	143	11	.25	.23	6	4	-.28	-.49
4. Always partner	29	2	.63	.57	28	2	.46	.37	3	2	-.12	.28
Eta/Beta			.12	.09*			.09	.08*			.22	.20*
R Square				.149				.071				.297

cont...

Table 6.4 Unadjusted and adjusted deviations for current family size within couples labor force status and by gender role egalitarianism.

Variable	BOTH DO NOT WORK (mean=.45) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=.04) N	%	Unadj	Adj.**
SHARCOOK								
1. Always you	46	32	.05	-.09	910	27	.10	.02
2. Mostly you	68	48	.04	.07	1821	54	.04	.02
3. Equally	25	17	-.08	.06	521	15	-.20	-.05
4. Mostly partner	4	3	-.70	-.38	118	4	-.51	-.22
Eta/Beta			.07	.06			.11	.04
HOUSWORK								
1. Always you	44	31	.23	-.00	719	21	.11	-.12
2. Mostly you	65	45	-.06	-.13	1707	51	.05	-.00
3. Equally	34	24	-.19	.24	894	26	-.15	.10
4. Mostly partner	--	--	--	--	50	1	-.50	-.12
Eta/Beta			.09	.08			.09	.06*
CHLDCARE								
1. Always you	44	31	.79	1.19	629	19	.38	.28
2. Mostly you	43	30	.07	-.01	1401	42	.23	.13
3. Equally	55	38	-.71	-.95	1323	39	-.42	-.27
4. Mostly partner	1	.6	.94	.39	17	.5	-.12	-.08
Eta/Beta			.34	.49*			.28	.18*

cont...

Variable	BOTH DO NOT WORK (mean=.45) N	%	Unadj	Adj	ALL LEVELS COMB. (mean=.04) N	%	Unadj	Adj.**
CHLDCLOTHES								
1. Always you	45	31	-.00	-.68	1084	32	.24	.10
2. Mostly you	45	31	.57	.78	1133	34	.21	.18
3. Equally	52	36	-.53	-.12	1135	34	-.45	-.28
4. Mostly partner	2	1	1.35	.99	18	.5	.39	.35
Eta/Beta			.26	.33*			.26	.16*
SCHLWORK								
1. Always you	25	17	.22	-.19	432	13	.32	.06
2. Mostly you	25	17	.06	-.56	734	22	.19	.01
3. Equally	88	61	-.05	.25	2052	61	-.15	-.03
4. Mostly partner	6	4	-.48	-.57	141	4	.30	.28
Eta/Beta			.08	.18			.16	.05*
DECISION								
1. Mainly women	16	11	1.42	1.36	313	9	.15	.12
2. Equally shared	105	74	-.21	-.21	2672	79	-.06	-.05
3. Mostly partner	16	11	-.02	-.01	320	9	.27	.19
4. Always partner	5	4	-.02	-.00	65	2	.51	.41
Eta/Beta			.28	.27*			.11	.08*
R Square				.293				.145

* The effect of these variables are significant at least .10 level.
** Adjustments are made for other independent variables and couples labor force status.

find that, in general, the one who works contributes relatively less at home. More specifically, activities such as cooking, housework, taking care of children or shopping for children's clothes, albeit least likely to be enjoyed by men, are participated in more often by men (either equally or alone) if the wife is working. But still there is a substantial hiatus in husband/wife participation in such activities. On the other hand, couples participate equally in supervision of children's school work and financial decision-making. There is also some evidence indicating that women tend to make the most financial decisions by themselves when they alone work outside the home. This could, to some extend, be due to the possibility that women in these categories have a better education than their partners.

When we look into another situation where either both spouses work or don't work, the difference in participation seems to be larger for SHARCOOK, HOUSWORK, and CHLDCARE. Evidently, the percentage of women taking part in activities such as cooking, house work and child care tends to increase when both spouses are not in the labor force. Concomitant is the decrease in equal/husband's participation in such activities.

Overall, husbands' participation in household activities is path-breaking, particularly when their wives are working. Yet, their contributions are not significant enough to reduce the 'double burden' confronted by working

women. In general, these findings are similar to those reported by Bergmann (1986). She contradicts the economists' view (for e.g. Becker, 1981) that the husband's time is so well paid for in the market place that it is too valuable to be devoted to housework and that there would be a financical loss if the family moved in an egalitarian direction. She complains that economists do not explain the husband's low contributions to family care services in those situations where the wife's total work time is greater than the husband's. According to her, since men are not responding to the increased participation of women in the labor force by substantially increasing their participation at home, a greater change may be the 'industrialization of household labor,' i.e. the purchase of household services that are traditionally performed by the wife.

Now, how do the unequal contributions of husband and wife in household activities translate into fertility behaviour? Table 6.4 shows that the average number of children tends to be higher in households where only the husband works (.33) or both spouses don't work (.45), while it tends to be lower in households where both spouses work(-.20) or only the wife works(-.05). In general, couples demonstrating role egalitarianism are likely to have less children irrespective of their labor force status. There are, however, a few exceptions to this generalization. For example, equal sharing of household chores by husband and wife results in larger family size for some of the

variables, by holding other factors constant. This is true particularly in households where both spouses are not in labor force and share equally in activities such as cooking, housework, and supervision of children's school work. It is also true, to some extent, in households where the husband alone works but participates equally in housework.

When we compare households in which either the husband or the wife works, it is interesting to note that all the variables exert significant influence on current family size for former group (husband only work), while only three variables exert significant influence for the latter group (wife only work). However, caution should be taken in assessing the level of significance of individual variables, since some of these are a manifestation of smaller sample size. Particularly, the larger deviation resulting from the 'mostly partner' category seems merely a statistical artifact. Therefore, we need to look into categories of the corresponding variables even if they are not statistically significant. In doing this, we will focus on categories with twenty or more cases.

It is not readily apparent from table 6.4, whether or not one of the spouses' being in the labor force makes any difference in terms of their decisions about family size. Nevertheless, the beta values indicate that the variables used in the analysis are relatively more important in explaining fertility differentials in households where the wife alone works. Surprisingly, in such households only on

three occassions (SHARCOOK, HOUSWORK, and CCLOTHES) is the average number of children lower if these duties are performed by women. A similar situation emerges with three variables (SHARCOOK, HOUSWORK, and CHLDCARE) in households where the husband alone works and the duties are performed by partners, but the sample size is not large enough to attach any confidence to this finding. It is also interesting to note that the average number of children is lower in households where the husband alone works and the financial decisions are made mainly by women. With these few exceptions, couples in segregated role relationships, in general, have more children.

Comparison of households in which both spouses either work or don't work reveals that performance by women of traditional duties corresponding to at least one category (always you/mostly you) on each of the five variables, results in smaller family size if both spouses are not in the labor force. On the other hand, if both spouses are in labor force, only two variables (HOUSWORK and SCHLWORK) produce similar results, but the effects are much weaker. Note also, if neither spouse is in the labor force and the husband/partner does most of the cooking or housework the couple is likely to have a smaller family. Adjustments for duration marriage did not change these findings and are therefore not discussed.

In sum, multivariate analysis of gender role egalitarianism adds little support to the notion that

greater workplace equity brings equal participation at home and that the one who contributes less by employment contributes more at home. Yet, there is a substantial hiatus between husband's and wife's participation at home. Although husbands increase their participation at home when the wife alone works, their participation is still not large enough to reduce the 'double burden' faced by working women. In general, with few exceptions, couples in joint role relationships are likely to have smaller family size while the reverse is true for couples in segregated role relationships. The analysis also suggests that in households where either only the wife works or both spouses are unemployed, couples may have smaller family size. Since most of these women play the traditional role as well, having a large family might increase their burden.

Table 6.5 presents the relationship between value of children and fertility by current labor force status of women. The table reveals no systematic pattern of relationship between the value of children and fertility, except for the two variables of GOAL and HAPPINESS. Also, most of the variables have a significant influence on fertility for women in the labor force. The average number of children is higher for women not in the labor force (.35) than for those in the labor force(-.18).

First, from an examination of the subjective cost of children, it is clear that the variable opportunity cost, the only variable significant in bivariate analysis, is

Table 6.5 Unadjusted and adjusted deviations for current family size (net age) within wife's labor force participation by value of children

Variable	IN LABOR FORCE (mean=-.18) N	Uadj.	Adj.	NOT IN LABOR FORCE (mean=.35) N	Unadj.	Adj.	ALL LEVELS COMB. (mean=.05) N	Unadj.	Adj.**
DISTANCE									
1. S. Disagree	573	.10	.09	478	-.03	-.03	1051	.04	.03
2. Disagree	938	-.06	-.06	708	.02	.02	1645	-.03	-.03
3. Agree	287	.04	.06	243	.01	.03	530	.03	.04
4. S. Agree	30	-.30	-.32	23	-.06	-.13	53	-.20	-.23
Eta/Beta		.07	.07*		.02	.02		.04	.03
BURDEN									
1. S. Disagree	30	-.30	-.37	29	.11	.13	59	-.07	-.13
2. Disagree	73	-.17	-.20	78	-.34	-.31	150	-.22	-.25
3. Agree	696	.01	.04	529	.02	.02	1225	.01	.02
4. S. Agree	1029	.01	.00	815	.02	.02	1844	.01	.01
Eta/Beta		.05	.06*		.06	.06		.04	.05*
OPCOST									
1. Not at all	274	.05	.04	168	.03	.04	441	.01	.05
2. Not very much	453	-.04	-.04	305	-.14	-.11	758	-.10	-.07
3. Fair amount	705	-.01	-.02	555	.07	.05	1260	.02	.01
4. A lot	395	.03	.04	424	.00	.00	819	.06	.02
Eta/Beta		.03	.04		.06	.05		.05	.03

cont...

Variable	IN LABOR FORCE (mean=-.18) N	Uadj.	Adj.	NOT IN LABOR FORCE (mean=.35) N	Unadj.	Adj.	ALL LEVELS COMB. (mean=.05) N	Unadj.	Adj.**
GOAL									
1. S. Disagree	119	-.52	-.33	60	-.43	-.30	179	-.55	-.31
2. Disagree	413	-.13	-.04	269	-.15	-.12	682	-.16	-.07
3. Agree	715	.08	.07	587	.04	.03	1301	.06	.05
4. S. Agree	581	.10	.01	535	.09	.06	1116	.11	.03
Eta/Beta		.15	.08*		.10	.07		.14	.07*
AFFECTION									
1. S. Disagree	34	-.55	-.45	80	-.33	-.27	219	-.51	-.40
2. Disagree	249	-.15	-.04	171	-.05	.09	420	-.12	.01
3. Agree	827	.01	.01	632	.03	.04	1458	.01	.02
4. S. Agree	718	.08	.03	631	.00	-.05	1350	.06	-.01
Eta/Beta		.11	.06		.06	.05		.09	.05*
HAPPYIESS									
1. Not at all impt	139	-.55	-.45	80	-.33	-.27	219	-.51	-.40
2. Not very impt	351	-.25	-.22	211	-.30	-.27	563	-.31	-.24
3. Important	551	.01	.00	450	-.05	-.05	1001	-.01	-.02
4. Very impt	786	.20	.18	710	.16	.14	1496	.20	.16
Eta/Beta		.20	.17*		.14	.12*		.18	.15*
R Square			.061			.033			.086

* The effect of these variables are significant at least at .10 level.
** Adjustmests are made for other variabless and wife's labor force participation.

negligible, while the other two variables are significant for women in the labor force. Respondents agreeing that children mean heavy responsibility (BURDEN) are likely to have more children. Conversely, those disagreeing with such a statement are likely to have fewer children. A small number of women not in labor force disagree with the notion of children as burden. Women in this group may be housewives whose opportunity costs are low and as a result do not see additional children as an increased burden. On the other hand, respondents who agree that having children distances spouses, have a lower mean number of children, paricularly in the case of women in the labour force. Apparently, this is true even among those disagreeing with this statement.

With regard to the subjective benefit of children, the variables show the expected relationship to fertility. The majority of the respondents' particularly women not in the labor force, agree that having a child provides goals, affection, and happiness in life. These respondents have a higher mean number of children than their counterparts who disagree with the belief that such benefits result from having children. In general, these variables are relatively more important in explaining variation in fertility than variables measuring the subjective cost of children. The analysis, however, reveals that although respondents associate burden/cost with having children, they still have more children. This fact leads us to believe that women may have children not merely on the basis of cost-benefit

considerations, but on the basis of other personal motives not captured by variables in the analysis.

In sum, the multivariate analysis of the value of children and fertility shows that the variables used in the analysis are better predictors of fertility differentials for women in the labor force than for women not in the labor force, as demonstrated by the explained variance. Further, the variables measuring the subjective benefit of children are more consistent with our expectations. That is, women who feel that having a child provides, goals, affection, and happiness are likely to have more children. On the other hand, variables measuring the subjective cost of children do not show any systematic pattern in family size. Respondents agreeing that children are a heavy responsibility have more children, while the respondents disagreeing or strongly agreeing that children distance spouses have a smaller number of children. When we look into all the levels combined, we see that although a greater percentage of respondents feel that having a child means heavy responsibility and interferes with their work opportunities outside the home, they still have more children. This appears to be true even after adjustment for duration of marriage. This situation could to some extent be due to the fact that, in a country like Canada, where use of contraceptives is universal, women might, in a conscious effort to reach a desired family size, hold positive rather than negative opinions about having children. However, the

response to the question of whether or not having a child distances spouses tends to support the conclusion of previous studies that those who strongly agree with this statement are likely to have fewer children, particularly in developed nations. In other words, couples do make hedonic calculus and do choose to have fewer children.

6.4 Biological Determinants and Fertility

With greater emphasis on the social, economic and, to some extent, psychological variables in studying the determinants of fertility, biological variables receive little attention unless they enter into the theoretical model as explanatory or conditioning variables. Biological factors, however, mediate the effects of basic determinants of fertility. Thus, it is necessary to recognize the role of these intermediate variables. Davis and Blake (1956), in a frequently cited article, provide a taxonomy of intermediate variables mediating between fertility and explanatory variables. Their framework identifies three categories of variables necessary for successful human reproduction: 1) variables which define the probability of sexual intercourse, such as age at marriage, 2) variables which define the probability of a conception resulting from sexual intercourse, such as the use of contraception; and 3) variables which define the probability of a conception resulting in a live birth, such as spontaneous or induced abortion. Bongaarts (1978, 1982) presents an analytical tool

to quantify the relationships between the intermediate variables and the level of fertility. His quantitative framework uses aggregate data, and his analysis indicates that variations in four factors--marriage, conception, lactation, and induced abortion--are the proximate causes of fertility differences among populations. Researchers have used these proximate determinants in fertility analysis; in fact, extensive use of this framework can be seen in the World Fertility Survey reports.

The Canadian Fertility Survey data do not allow us to compute these indices, therefore, other measures will be used to capture the biological aspect in this analysis. More specifically, three variables--contraceptive use between pregnancies, birth intervals and duration of marriage--are used for this purpose.

While the conceptualization of the last two variables is straightforward, the first variable, contraceptive use between pregnancies, requires some explanation. This variable is constructed to assess whether or not couples are able to control their pregnancies when they wish with the use of contraceptives. For each pregnancy, the extent of the respondent's control over the particular outcome is determined. In a controlled situation, a woman uses contraceptives regularly but stops at a particular time to become pregnant, or a woman may not have used any contraceptives but wants to become pregnant at that particular time--this is particularly true for women

recently married. In an uncontrolled situation, a woman may not have used any contraceptives but would have preferred to become pregnant at some other time or never to have a child. Once all the pregnancies are classified in this way (controlled=1, uncontrolled=0), they are summed up to determine the overall control of fertility for each respondent. Then these values are divided by the number of pregnancies for each respondent, in order to assess the degree of control exercised by respondents during pregnancies. Cases where the respondents report no pregnancies and continue to use contraceptives are classified under the controlled group. On the other hand, if the respondents report no pregnancies and neither the respondent nor her partner uses contraceptives, they are assumed to be sterile and are excluded from the analysis.

Variables such as gender role egalitarianism, value of children and wife's education are also used in the analysis. Previous studies have shown that gender role egalitarianism is related to fertility control (for e.g. Scanzoni, 1976). Other studies also report a relationship between value of children and fertility (for e.g. Turner and Simmons, 1977). In the next chapter, we will examine how these two variables influence fertility through proximate determinants. We are already familiar with the variables used to measure these two constructs (gender role egalitarianism and value of children). But the nature of measurement of these constructs is modified for this analysis.

The variable gender role egalitarianism is a composite index. First, the categories of each variable are dichotomised into couples in egalitarian (1) versus segregated (0) role relationships. Then these values are summed across all six variables. Resulting higher score means greater role egalitarianism. Similar computations are made separately for subjective cost and benefit of children. Then the scores of subjective benefit are substracted from the scores of subjective cost to obtain the variable cost-benefit (see Appendix A for details).

6.4.1 Bivariate Analysis of Biological Factors

Table 6.6 presents Pearson correlation coefficients for biological and other variables considered in the analysis. The coefficients are not large enough to cause any multicollinearity problems. All the variables are significantly related to current and expected family size.

The biological variables, such as degree of contraceptive use and first birth interval, are negatively related to fertility, while the duration of marriage is positively related. The association of these variables seem to be much stronger for current than for expected family size. It is evident from table 6.6 that respondents planning their pregnancies through the use of contraceptives and those with a longer first birth interval are likely to have smaller current and expected family sizes.

Table 6.6 Pearson correlation coefficients for biological and other independent variables.

	AFERT	EXFERT	COSTBENFIT	GRE	FPLAN	INTERVAL	WEDUC	DURMAR
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.1256 (3674) P= .000	-.3024 (3674) P= .000	-.1369 (3383) P= .000	-.4226 (3203) P= .000	-.2532 (3674) P= .000	.1246 (3397) P= .000
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.1590 (3659) P= .000	-.1903 (3659) P= .000	-.0914 (3375) P= .000	-.2693 (3192) P= .000	-.1617 (3658) P= .000	.0727 (3384) P= .000
COSTBENFIT	-.1256 (3674) P= .000	-.1590 (3659) P= .000	1.0000 (3680) P= .	-.0103 (3680) P= .267	-.1037 (3388) P= .000	.0215 (3209) P= .112	.1812 (3679) P= .000	.0531 (3402) P= .001
GRE	-.3024 (3674) P= .000	-.1903 (3659) P= .000	-.0103 (3680) P= .267	1.0000 (3681) P= .	.1421 (3389) P= .000	.1514 (3209) P= .000	.1657 (3680) P= .000	-.3560 (3403) P= .000
FPLAN	-.1369 (3383) P= .000	-.0914 (3375) P= .000	-.1037 (3388) P= .000	.1421 (3389) P= .000	1.0000 (3389) P= .	.1984 (3021) P= .000	.1067 (3388) P= .000	-.1495 (3134) P= .000
INTERVAL	-.4226 (3203) P= .000	-.2693 (3192) P= .000	.0215 (3209) P= .112	.1514 (3209) P= .000	.1984 (3021) P= .000	1.0000 (3209) P= .	.2627 (3208) P= .000	-.0370 (3209) P= .018
WEDUC	-.2532 (3674) P= .000	-.1617 (3658) P= .000	.1812 (3679) P= .000	.1657 (3680) P= .000	.1067 (3388) P= .000	.2627 (3208) P= .000	1.0000 (3680) P= .	-.2770 (3402) P= .000
DURMAR	.1246 (3397) P= .000	.0727 (3384) P= .000	.0531 (3402) P= .001	-.3560 (3403) P= .000	-.1495 (3134) P= .000	-.0370 (3209) P= .018	-.2770 (3402) P= .000	1.0000 (3403) P= .

The sociopsychological variables, gender role egalitarianism and cost-benefit, show the expected relationship with fertility. That is, fertility decreases if the couples feel that cost outweighs the benefit of having children and if they share equally various home activities. Meanwhile, if we look into the association of these two factors with biological variables, we see that gender role egalitarianism is much more strongly correlated than value of children. As the egalitarianism increases couples are more likely to plan their pregnancies and postpone their first birth. Evidently, couples married in recent years are appear to maintain greater egalitarianism at home; these couples may also belong to younger cohorts. On the other hand, respondents who feel that cost outweighs benefit seldom plan their pregnancies. This association is unexpected. It is also interesting to note that respondents married for a longer period of time feel that children incur more costs than they provide benefits. Note also, there is some indication that egalitarian couples feel the cost of having children is relatively low.

6.4.2 Multivariate Analysis of Biological Factors

Preliminary analysis of the variables discussed earlier indicates that the influence of birth interval on fertility varies by marriage duration. This interaction is found to be highly significant (<.001 level). Therefore, the analysis is done within marriage duration, as shown in table 6.7. For

the first two categories of duration of marriage, all the variables in the model exert significant influence on current family size, while for the remaining two categories, only the biological variables appear to be significant. This difference is reflected by the higher explained variance for the first two categories of marriage duration.

When we look into respondents' planning of pregnancies (FPLAN), we note that the average family size is lower for the two extreme categories, although the Pearson correlation coefficients indicated a significant inverse relationship of FPLAN with fertility. This non-linear relationship seems to be consistent across all categories of duration of marriage. Note, however, that while the percentage of respondents making some plans about their pregnancies increases with duration of marriage, the percentage of respondents making perfect plans about their pregnancies tends to decrease. In terms of effects, although one could understand a smaller family size for respondents planning all pregnancies with the use of contraceptives, it is not readily apparent why similar results emerge for respondents not planning any of their pregnancies. However, closer examination of respondents who did not plan their pregnancies reveals that 1) about 90% of the respondents had fewer than three pregnancies--these pregnancies were not desired by the respondent at that particular time (see the procedure for FPLAN calculation); also, about 40% of the women experienced one or more pregnancy wastage; 2) of the 314 (8%)

Table 6.7 Unadjusted and adjusted deviations(**) for current family size within duration of marriage by other independent variables.

	LE 6 yrs			7-12 yrs			13-19 yrs			20-34 yrs		
Variable	N	Unadj.	Adj.	N	Unadj.	Adj.	N	Unadj.	Adj.	N	Unadj.	Adj.
FPLAN												
1. No plan	78	-.08	-.15	54	-.64	-.59	53	-.41	-.46	67	-.54	-.60
2. Some plan	140	.73	.40	251	.43	.29	311	.37	.29	406	.43	.30
3. Perfect plan	465	-.21	-.09	454	-.16	-.09	443	-.21	-.15	291	-.47	-.28
Eta/Beta		.43	.23*		.36	.27*		.30	.24*		.31	.22*
INTERVAL												
1. LE 1 years	261	.58	.40	259	.43	.36	358	.29	.21	468	.40	.32
2. 1-2 years	145	.06	.07	137	.17	.13	134	-.12	-.11	120	-.26	-.24
3. 2-4 years	182	-.45	-.33	193	-.10	-.09	171	-.05	.00	96	-.57	-.46
4. 4 + years	95	-.81	-.57	170	-.68	-.55	144	-.53	-.41	79	-1.26	-.98
Eta/Beta		.60	.42*		.46	.37*		.30	.23*		.38	.30*
COST-BENEFIT												
1. Low	432	.05	.03	471	.05	.03	470	-.01	.00	442	.10	.05
2. Medium	183	.03	.01	198	-.03	-.01	210	.06	.04	193	-.14	-.06
3. High	68	-.37	-.21	90	-.20	-.12	127	-.04	-.07	129	-.13	-.08
Eta/Beta		.14	.08*		.09	.05*		.03	.04		.08	.04
GRE												
1. No egalitarian	14	.51	.19	36	-.01	-.07	54	.12	.07	101	.35	.23
2. Low egalitarian	205	.32	.14	388	.13	.07	478	.04	.04	437	-.02	-.04
3. Medium egali.	322	-.01	-.01	265	-.10	-.04	220	-.10	-.09	196	-.14	-.02
4. High egali.	143	-.48	-.19	70	-.34	-.20	55	-.08	-.01	30	-.05	-.08
Eta/Beta		.33	.14*		.16	.09*		.07	.06		.10	.06
R Square			.478			.313			.160			.223

* The effect of these variables are significant at least at .10 level.
** Adjusted for other independent variables and wife's education.

respondents belonging to this category about 195 (63%) are currently using contraceptives, 69 (22%) are sterilized and 44 (14%) of them are not using any contraceptives for reasons such as 'want to have baby' or 'new baby'; and 3) about 206 (67%) respondents had their first birth within the first year of marriage, leading us to speculate that these women, after unplanned pregnancies, started to use contraceptives in a rigorous fashion.

The first birth interval has significant inverse relationship with current family size across all categories of marital duration. Its effect is comparatively stronger than planning of pregnancies (FPLAN), as shown by the beta coefficients. Even after the adjustment for other variables the range remains more than .90 in three categories of marital duration. Most respondents had their first birth within the first year of marriage, especially women married for 20 or more years.

The sociopsychological variables value of children (COST-BENEFIT) and gender role egalitarianism have significant influence on fertility for the first two categories of marital duration. With few exceptions, these two variables are inversely related to fertility. Not surprisingly, their effects are much weaker in relation to biological variables. Most of the respondents feel that the subjective cost of children is relatively lower than the subjective benefit. Notice, however, that the percentage of respondents feeling that the cost outweighs the benefit,

tends to increase with marital duration. This is not surprising, since women married for a longer period of time are in a better position than others to evaluate children on the basis of their experience.

With regard to gender role egalitarianism, the percentage of couples non-egalitarian or low egalitarian couples tends to increase with duration of marriage. Conversely, the percentage of couples with medium and higher egalitarianism appears to decline with marriage duration. As shown by the beta values, gender role egalitarianism is relatively more important than value of children, particularly among recently married women.

Table 6.7 reveals that the four variables used in the analysis, along with wife's education, explain a significant portion of variance in current family size for the first two categories of marital duration. Among these, biological variables explain most of the variation in fertility. We have not examined how much of the variations in the biological variables are explained by sociopsychological variables; this will be the focus of the next chapter.

To conclude, the findings from this chapter can be summarized as follows:

1.

Sociopsychological variables, such as gender role egalitarianism and value of children, offer little explanation for variation in fertility. With regard to gender role egalitarianism, there is some evidence

work-place equity for couples brings equal participation at home, and that the one who contributes less by employment contributes more at home. Husbands increase their participation at home when wives work outside, but their participation is nevertheless insufficient to reduce the 'double burden' faced by working women. With few exceptions, couples in joint-role relationships are likely to have smaller family size than couples in segregated role relationships.

2.

With regard to value of children, most respondents are of the opinion that having a child provides greater benefits and that the accompanying costs are relatively fewer. In a perfect contraceptive society like Canada's this may not be surprising. Individuals make a conscious effort to control their family size and achieve their desired family size. However, in situations where costs are perceived as outweighing the benefits of having children, individuals prefer to have smaller family size.

3.

Higher gender role egalitarianism is associated with greater use of contraceptives in planning pregnancies and with postponement of the first birth. Similar associations are not observed for the value of children. This discrepancy suggests that couples' decisions to have children may be influenced not merely by cost-benefit considerations but by narcisstic motives as well. However,

among couples married for a shorter duration, strictly rational cost-benefit considerations seem to be significantly related to current family size.

Chapter 7

A CAUSAL MODEL FOR THE DETERMINANTS OF FERTILITY

The emphasis thus far has been on establishing the causal connection between structural, economic, sociopsychological, and biological variables and fertility. Although much could be learned from these experimentations, a more complete understanding of fertility phenomena requires us to address various determinants together with their interrelationships. For example, one might be able to explain a significant portion of variance in fertility by means of a variable like education, but if one does not know what education really means in this context or how it influences fertility through other variables, one's gain in understanding may be limited. The objective of this chapter, therefore, is to develop a causal model to study the determinants of fertility.

As mentioned earlier, despite the amount of work that has gone into developing an adequate theory of fertility, there is little consensus on a single dominant theory. Nevertheless, the information obtained from various frameworks will be used to develop an integrated causal model for the present study. In particular, the framework developed Bagozzi and Van Loo (1980), will, with some modification, enable us to identify the most important elements involved in the fertility decision-making process.

7.1 Theoretical Framework

The theory of fertility developed by Bagozzi and Van Loo (1978:303) views fertility decisions as an outcome of social exchanges. The nature of these exchanges is represented by the degree of egalitarianism and social influence between husband and wife. Social and economic variables are then viewed as contraints on the husband's and wife's attitudes and their social exchanges. We will briefly examine how these components are likely to influence fertility.

7.1.1 Socioeconomic Determinants

Economists view fertility as an outcome of family decision processes whereby households select a family size that maximizes satisfaction, given the relative prices of commodities, tastes, and total income. Economic variables such as, family income, opportunity cost of wife etc. are assumed to influence fertility through social psychological processes. That is, attitudes (tastes) toward fertility arrived at by couples through sociopsychological processes are functions of subjective rewards and costs of children, which are in turn are constrained by income and the prices of goods and services. These subjective rewards and costs are also influenced by the power, conflict, and social influence flowing between husband and wife. These ideas are consistent with Easterlin's (1969) and Leibenstein's (1974) suggestions.

Social norms and socioeconomic status are also important social determinants of fertility. Social norms, with respect to fertility, specify ideal family size, child bearing practices and marital sex role behaviour. Norms are assumed to influence fertility through social exchanges between husband and wife. In other words, they define the rights and responsibilities of the spouses with regard to decision making, career choice, and overall sex-role egalitarianism. Some norms are learned prior to marriage and are brought to the relationship as constraints on give-and-take.

The socioeconomic status of a family indirectly influences fertility. It leads them to adopt a family size and pattern of consumption consistent with their rank in the society. For example, there is more social pressure on families with a high socioeconomic status to provide extensive child services, engage in dual husband-wife careers, and spend more on recreation and travel than there is on families of lower socio-economic status. Taking all this into consideration, one would expect a negative influence of SES on fertility. In addition, the family's socioeconomic status is likely to influence its sex-role relationships (Rainwater, 1960, 1965).

7.1.2 Social Psychological Processes

Sociopsychological processes are an essential component of Bagozzi and Van Loo's theory of fertility, which assumes

that fertility decisions are the outcome of give-and-take and sharing between the husband and wife. Marital exchanges are proposed to be a function of three broad determinants: a) the social influence accompanying these exchanges, b) the characteristics of the husband and wife, and c) the socioeconomic factors constraining these exchanges. Social influence includes actual transfer of messages between spouses in order to express their needs and desires. In order to satisfy individual needs and achieve mutual satisfaction the husband and wife exchange rewards and punishments associated with their physical, psychic and social assets. Empirical researchers operationalize social influence through the power, conflicts and role egalitarianism existing between husband and wife. It is assumed that the more balanced the power, the less the conflict, and the greater the egalitarianism, the greater the probability that couples will use effective contraceptives to achieve smaller family size.

The theory hypothesizes that the characteristics of husband and wife, such as attitudes of family members to depend on and to influence the social exchanges occurring between the spouses. The attitudes of family members are thought to exhibit three conceptually distinct characteristics: a) the affective component expresses the emotional content of attitudes, such as the feelings of family members toward the idea of having children, providing child care and the like. The more positive the affect,

feelings, and desire to have children the greater the probability the family will have them; b) the behavioral component reflects the actions and choices family members make, or intend to make, in order to have children. For example, while the opening of a bank account for the education of a child expresses the positive attitude towards children, the decisions of spouses to pursue independent careers reflect their negative attitude towards having children; and, finally, c) the cognitive component captures the beliefs of family members with regard to the consequences of having children. For example, some spouses may associate a greater financial and psychological burden with having children, while others may associate greater affection, companionship and satisfaction.

In sum, fertility is hypothesized to be a direct function of social psychological process within the family and an indirect function of socioeconomic constraints on family size.

7.2 The Causal Model

The causal model for the present study incorporates proximate variables, in addition to socioeconomic and psychological variables. Although most of the frameworks suggest that the last two components influence fertility through proximate or biological variables, these components have not been explicitly modeled. Thus, the model is in a way a variant of Bagozzi and Van Loo's model. The present

model hypothesizes that fertility is a direct function of biological variables and an indirect function of sociopsychological and socioeconomic variables.

The discussion is organized as follows. First, the variables are selected to measure the underlying concepts. Second, the hypotheses to be tested are presented. Third, the method of analysis is discussed. Following this, the findings are presented. Included are findings from models tested for ethnicity, religion and region.

7.2.1 Selection of Variables

The variables selected to measure a given concept must fulfill the following conditions: 1) the level of measurement should be at least an ordinal, and 2) the number of missing cases should not be large. The other obvious requisite, of course, is that the indicators of a given concept demonstrate a reasonable association among themselves.

These criteria and the variables availability in the Canadian Fertility Survey lead to the formulation of concepts necessary for the causal model. The rationale for including the various indicators to measure an underlying concept should be evident from the discussion in chapters 4 to 6. Therefore, in this chapter we will provide only a brief account of selection of variables.

7.2.1.1 Socioeconomic Determinants

The latent concepts classified under socioeconomic determinants include educational status, financial status, commitment to work and residence.

Educational status includes both husband's and wife's education. It has different consequences for men and women with regard to the fertility process and the roles they play in that process (Cain and Weininger, 1975; Cochrane, 1979; Janowitz, 1976; United Nations, 1983). Economists treat husband's education as 'permanent income' and wife's education as a proxy for 'opportunity cost'. Education is used here to assess the general status of the family, with the assumption that it tends to widen horizons by influencing the attitudes and exchange behaviours of the household members.

Economic status of the couples has been constructed by means of multiple indicators. Current income, it is argued, is not necessarily the appropriate income measure for household decisions having long-term consequences (Becker, 1965; Easterlin, 1969; Freedman, 1963). In its place, the authors suggest the use of 'permanent/potential income' (couples' expectations of income over their lifetime) and 'relative income' (the financial situation of a couple compared to that of ther couples). For the present study, the economic status is measured by indicators such as lifetime savings, financial planning, financial success and relative economic status.

The notion of commitment is measured by the number of work interruptions experienced by women in the labor force. The rationale for using such a measure is that women who work regularly are liable to develop greater commitment. Also, career jobs offer alternative interests and achievements that constrain domesticity and motherhood. Particularly for women who were in the labor force prior to marriage or prior to having their first child, such an interruption cost may be quite high. Thus, women with greater commitment to work are likely to have fewer children (Pinelli, 1971; Kupinsky, 1977).

Residential status of the respondent in youth is considered for this study because it encompasses a wide range of normative, sociopsychological and economic factors associated with the lifestyles of the habitants. The assumption here is that the societal and familial factors influencing a child's values and norms may have some bearing on his or her decision-making at later stages. In other words, urban-rural fertility differences in childhood residence can approximate family difference in childhood SES. And these differences are likely to reflect differential experiences in educational quality, exposure to relatively industrialized labor markets, and in general, exposure to relatively wealthier lifestyles. The degree of traditionalism, familism and life style associated with a given habitat might help to explain fertility differentials.

7.2.1.2 Social Psychological Processes

Gender role egalitarianism and value of children are the concepts used in the social psychological dimension. The former tends to capture the social influence between husband and wife. The assumption is that the husband and wife assume a set of roles within the marital relationship in order to meet their individual and joint sex role preferences. Such relationship will create greater-or-lesser egalitarian role statuses in their attitudes and behaviour with regard to sharing of household duties, childcare, decision-making etc. The more egalitarian the roles of husband and wife, the better their communication, and the more effective their limiting of family size (Back and Hass, 1973; ESCAP, 1974; Polgar and Rothstein, 1970; Rainwater, 1965; Scanzoni, 1972, 1976; Stokes and Dudley, 1972).

The value of children, measured by subjective cost and benefit of children, reflects the respondent's attitude toward having children. This in turn depends upon the social exchange between husband and wife. The premise here is that the greater the couple's desire for the rewards associated with a more egalitarian marriage, the lesser their desire for the benefits resulting from additional children.

7.2.1.3 Proximate determinants

The three biological variables considered for the causal model include fertility planning, birth interval and marriage duration. The variable fertility planning refers to the use of contraceptives in planning various pregnancies. The reason for using this measure over the current use of contraception is that the latter is irrevelant in causal modeling. It is possible to obtain a positive correlation between current or ever use of contraception and fertility because the decision to use contraceptives is based in part on the number of living children. Thus, not only is the association in the wrong direction, but the flow of causality is bidirectional (between fertility and contraception) rather than unidirectional (from contraception to fertility). The measure considered for the present study may alleviate this problem. The other two measures are direct and correspond to their respective concepts. It is hypothesized that the cumulative fertility of a continously married woman near the end of her reproductive career will be greater according to the following factors: 1) the less frequent her use of contraceptives in planning pregnancies; 2) the longer her period of exposure, as measured by marriage duration; and, 3) the more rapid her early rate of childbearing, as measured by first birth interval.

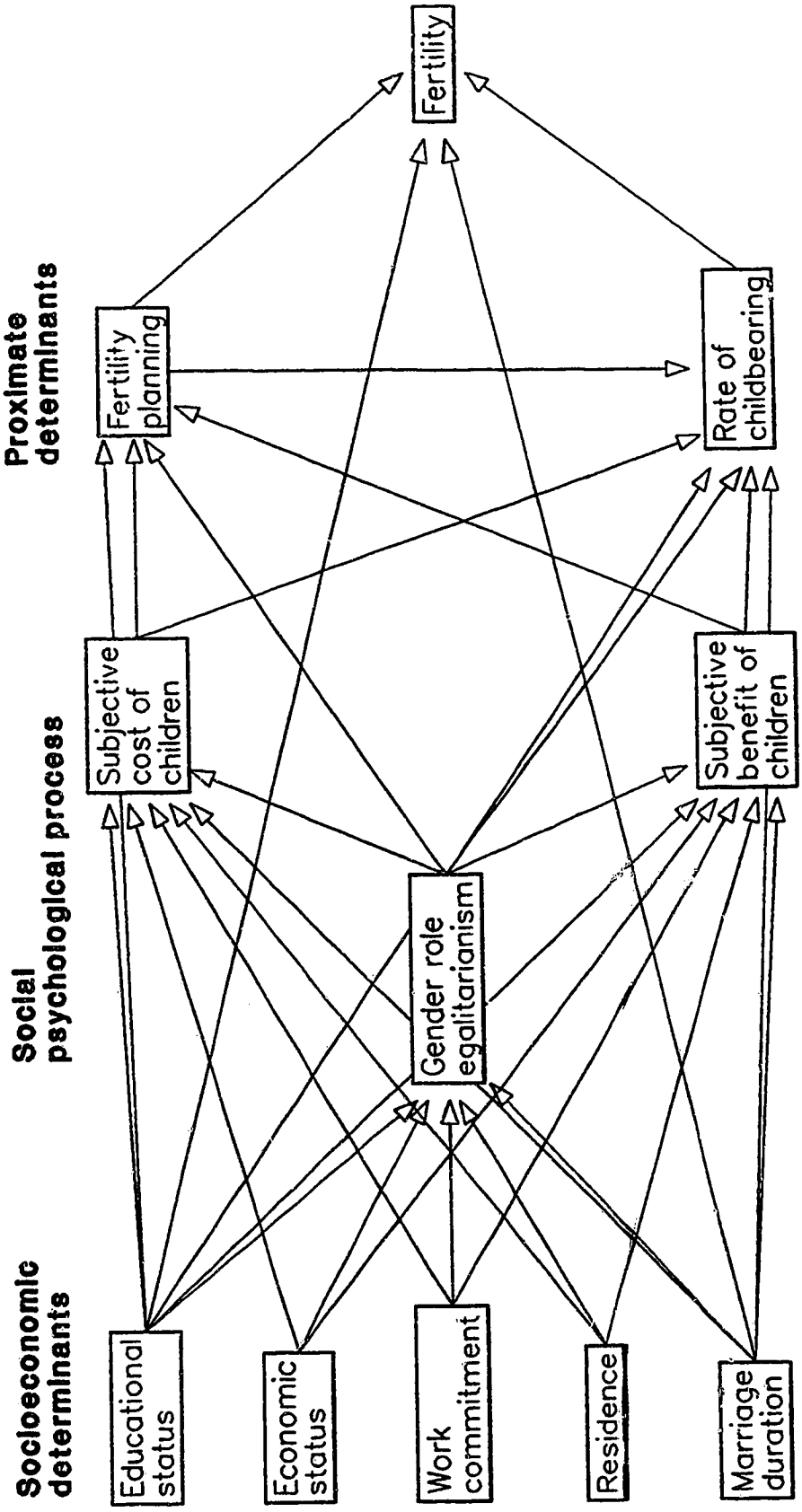
The proposed causal model is given in figure 7.1. Note, the concept of period in union measured by duration of marriage is included under socioeconomic determinants, since it is causally prior to social psychological processes. The Pearson correlation coefficients for the study variables are given in Appendix B.

As shown in figure 7.1, fertility is hypothesized to be a direct function of biological factors and an indirect function of the social psychological processes and socioeconomic conditions of the family. In other words, socioeconomic factors will affect gender role egalitarianism and the subjective cost and benefit of children, both of which, in turn, will influence fertility through biological factors. For simplicity, the model is assumed to be recursive.

7.3 Method of Analysis

A causal model typically consists of a theoretical structure involving the relationships among unobservable, hypothetical constructs referred to as latent variables. Although these latent variables are not directly measurable, they can be evaluated by one or more observable indicator variable. Using a single indicator to measure a given concept, as in path analysis, may introduce considerable measurement error in a causal model. One can overcome such a problem through the use of multiple indicators of each concept. It is the multiplicity of indicators that enables

Fig 7.1
Proposed model for the determinants of fertility



us to differentiate unreliability of measurement from an accurate index of the underlying concept.

The present study uses the linear structural relationship model, or LISREL, developed by Joreskog (1973,1977,1978), and Joreskog and Sorbom (1986). The LISREL computer program is effective in estimating causal models, particularly models involving multiple indicators. This program is not easy to learn or simple to employ; and it is expensive in terms of computer time use. LISREL consists of the structural equation model and the measurement model. The structural equation model describes the theoretical causal relationships among the latent variables through a set of general linear equations. The measurement model describes the measurement of the latent variables by the observable indicator variables and allows evaluation of the reliability of such measures.

The LISREL system overcomes some of the problems involved in employing such techniques as correlation and regression analyses. According to Joreskog (1973), there are three difficulties associated with these techniques: a) if there are measurement errors in the independent variables, these errors will give rise to inconsistent regression estimates; b) if the parameters in the structural equations and the reduced form are not in a one-to-one correspondence, one or more of the parameters of the structural equations may be overidentified or underidentified; and c) since the regression technique is applied to each equation separately,

one does not get an overall test of the entire causal structure. These difficulties are to a certain extent eliminated in LISREL analysis. In addition, the LISREL computer program is extremely flexible in that it can accommodate virtually any type of causal model, as well as efficient over variable sample sizes, and robust over nonnormality. The LISREL model makes allowances for structural errors, measurement errors, correlated errors of measurement, and models with reciprocal causation, as well as confirmatory factor analysis, longituditional analysis, simultaneous analysis in several populations, and covariance-structure analysis. Further, it provides modification indices and partial derivatives that give some clue about the validity of the model structure. Above all, LISREL allows the use of multiple indicators for the estimation of theoretical variables and builds models closer to the real world. It provides the test for how well the hypothesized model is able to reproduce the original variance-covariance matrix of the indicators. The procedure for estimating the parameters for the proposed model (Figure 7.2), along with the definition of the symbols used, is given in Appendix D.

7.4 Findings

The preliminary analysis of the proposed model (fig. 7.1) did not fit the data. The subsequent analyses indicated the need for the following modifications to the model: 1)

creation of two subconcepts of gender role egalitarianism--one dealing with household activities (GRE1) and the other with children (GRE2); and 2) deletion of problematic indicators of a given concept from the analysis. In addition to these changes, measurement errors of certain indicators are allowed to be correlated in the model.

Many nonsignificant paths were removed from the model, and LISREL was reapplied to the data. The final model (figure 7.2) provides the best fit of observed data with the theoretical model (χ^2= 52.30; DF=67; p= .706; GFI= .997; R^2= .797). Table 7.2 presents the indirect and total effects of exogenous and endogenous variables for this model.

7.4.1 Endogenous Variables

Figure 7.3 provides support for the hypothesis that fertility will be a direct function of biological variables and an indirect function of the social psychological processes within the family.

Gender role egalitarianism (GRE1)--dealing with household activities--exerts significant influence on GRE2--dealing with children, fertility planning and rate of childbearing. Couples sharing household activities also appear to share equally the activities surrounding children (.345). Such couples, however, tend to use contraceptives less frequently in planning pregnancies (-.450), and their first birth intervals are likely to be shorter (-.909). This finding does not confirm the egalitarian hypothesis, but the

Fig 7.2
Causal model for the determinants of fertility in Canada, 1984

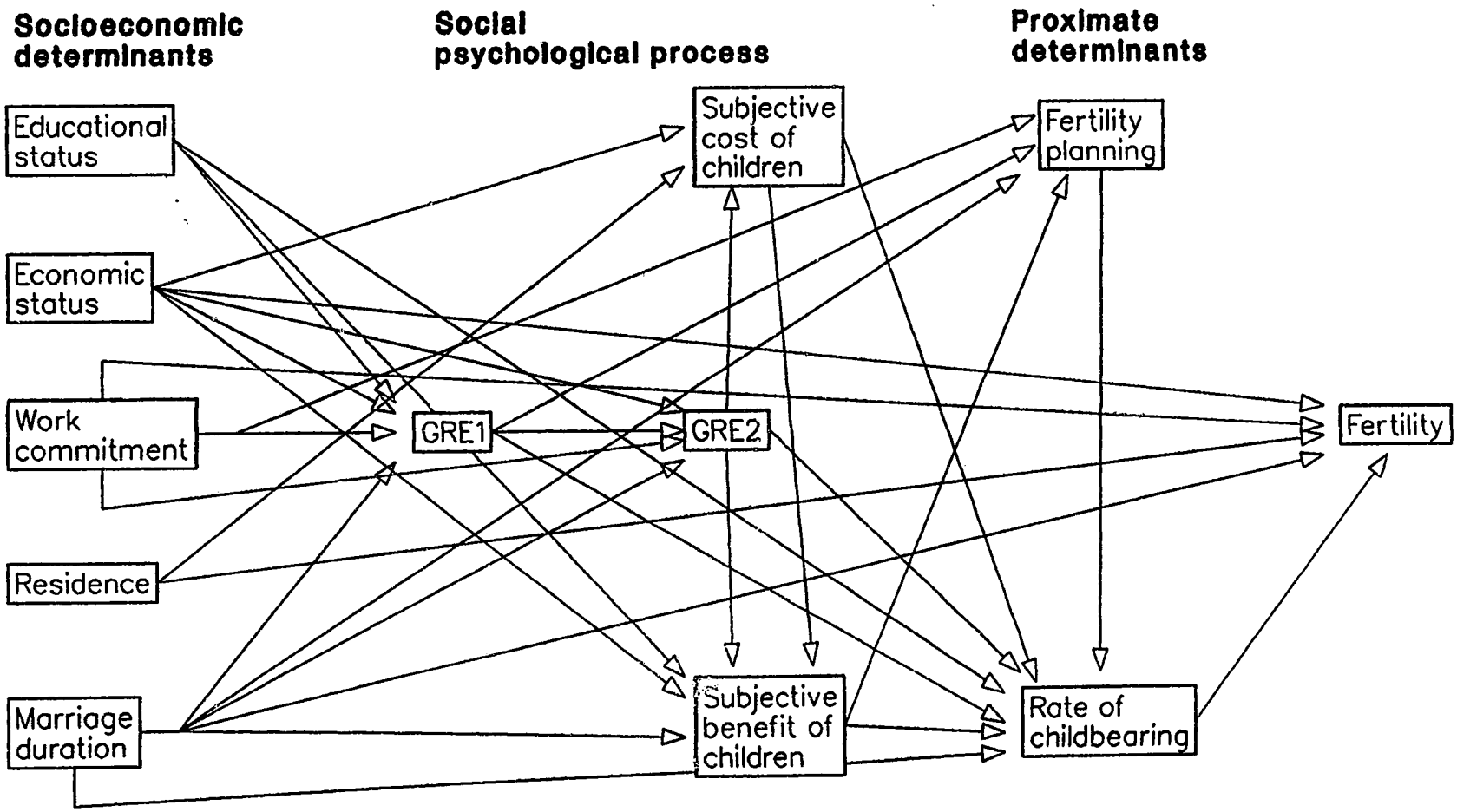


Table 7.1 Indirect and total effects of endogenous and exogenous variables for the model in fig 7.2

VARIABLE	INTERVAL	FPLAN		BENEFIT		COST		GRE2		GRE1	
	TE	IN	TE	IN	TE	IN	TE	IN	TE	IN	TE
FERTILITY	-.162	-.023	-.023	-.291	-.291	-.041	-.041	-.280	-.280	.061	.061
INTERVAL			.144	-.087	1.798	-.800	.252	-.506	1.728	.531	-.378
FPLAN					-.607	.270	.270	.108	.108	.038	-.412
BENEFIT							-.445	.078	-.178	-.061	-.061
COST									-.176		-.061
GRE2											.345

VARIABLE	WEDUC		ECOSTAT		INTERUPT		RESID		DURMAR	
	IN	TE	IN	TE	IN	TE	IN	TE	IN	TE
FERTILITY	-.071	-.071	-.063	-.472	.155	2.154	-.015	-.882	-.006	.028
INTERVAL	-.141	.440	.386	.386	-.961	-.961	.089	.089	-.002	.032
FPLAN	.026	.026	-.133	-.133	.174	-2.582	.095	.095	.019	-.192
BENEFIT	-.003	-.073	.051	.160	.112	.112	-.156	-.156	.008	-.020
COST	-.002	-.002	-.032	-.221	.111	.111		.352	.007	.007
GRE2	.014	.014	.027	.183	-.185	-.630	-.000	-.000	-.005	-.042
GRE1		.040		.081		-.539				-.014

indirect effects do provide some evidence that as gender role egalitarianism increases, couples tend to plan most of their pregnancies (.531) and have longer first birth intervals (.038). In general, egalitarianism with respect to household chores serves to raise the current family size through its influence on other variables in the model (.061).

On the other hand, the gender role egalitarianism (GRE2) measured by activities related to children has significant influence on the subjective cost and benefit of children and on the rate of childbearing. As gender role egalitarianism increases, the subjective cost and benefit of having [illegible] decrease while the rate of childbearing inc[illegible] indirect effect (table 7.2) of GRE2, however, [illegible]he benefit of children (.078), and fertility [illegible], and to decrease the rate of childbearing [illegible]ast to GRE1, GRE2 has significant negative [illegible]ertility (-.280).

With regard to subjective cost and subjective benefit of children, the former has a significant direct influence on rate of childbearing (1.052) and an indirect influence on fertility planning (.270), while the latter has significant direct influence on both the biological variables. Except for the path from subjective benefit of children to rate of childbearing, all other paths are in the expected direction. For example, as the subjective cost of children increases, the subjective benefit of children decreases (-.445), and

the rate of childbearing increases (1.052). Similarly, the use of contraceptives in fertility planning decreases with the subjective benefit of children (-.607). The standardized coefficients given in table 7.2 show that subjective cost has the strongest influence on the subjective benefit of children (-.533).[1] These two measures also exhibit stronger influence on the rate of childbearing, as shown by their respective standardized coefficients of .206 and .397. In general, both the subjective cost and the subjective benefit of children act indirectly to reduce current family size.

Among the two biological determinants, the rate of childbearing has significant direct influence on fertility and mediates the effect of fertility planning. The effects of these variables are as expected. The longer the first birth interval, the lower the current family size (-.162). Similarly, the higher the use of contraceptives in fertility planning, the longer the first birth interval (.144) and the smaller the current family size (-.023). The model implies, in a way, that the effects of all the endogenous or intermediate variables are transmitted through the rate of childbearing. This relationship is reflected in the magnitude of the standardized coefficient for the path leading from rate of childbearing to fertility (-.438).

In sum, the findings suggests that, while the effects of social psychological variables are mixed, the effects of

---

[1]The reciprocal effects between these two measures did not fit the model. Also, the reverse effect was found to be not statistically significant.

Table 7.2 Standardized coefficients, correlation of etas* and explained variance.

VARIABLE	FERT	INTERVAL	FPLAN	BENEFIT	COST	GRE2	GRE1	WEDUC	ECOSTAT	COMMIT	RESID	DURMAR
FERTILITY		-.438							-.167	.442	-.282	.226
INTERVAL	-.521		.127	.307	.206	.364	-.130	.483				.423
FPLAN	-.174	.115		-.112			-.073			-.256		-.594
BENEFIT	.035	-.003	-.010		-.533	-.256		-.358	.100			.424
COST	-.003	.032	.018	-.547		-.147			-.146		.216	
GRE2	-.280	.204	.291	-.005	-.167		.303		.144	-.223		-.558
GRE1	-.176	.053	.093	-.067	-.074	.474		.229	.085	-.308		-.249
R Square	.471	.232	.253	.474	.091	.488	.164					

* The correlations among the etas are given in the lower diagonal.

biological variables are as predicted. Gender role egalitarianism (GRE1)--operationalized by sharing of household activities--directly reduces the use of contraceptives in fertility planning and the rate of childbearing. Although its indirect effects are just the opposite, the final outcome is an increase in current family size. This is not surprising, since in egalitarian households both partners participate in household chores, thus permitting themselves to have extra familial interests as well as additional children. On the other hand, couples maintaining egalitarianism in activities related to children prefer to have smaller family size by postponing their first birth and planning their pregnancies with the help of effective contraception. But this is not readily apparent in their attitude toward children. Respondents from egalitarian households associate lower cost and benefit with having additional children. This implies, then, that in a country like Canada, where a small family norm is prevalent, individuals make fertility decisions not merely on the basis of cost-benefit considerations but on the basis of other personal motives as well. Or, perhaps the indicators used here are a poor proxy and do not sufficiently capture the realm of value of children. The higher correlation of measurement errors between the two latent concepts of cost and benefit would lend support to such speculations (Table 7.3). Nevertheless, the model supports the hypothesis that social psychological variables influence fertility through

Table 7.3 Disturbance terms, error variances and covariances.

	GRE1	GRE2	COST	BENEFIT	FPLAN	INTERVAL
PSI	.124	.098	.251	.101	4.188	5.542

THETA EPSILON

	ϵ_1	ϵ_2	ϵ_3	ϵ_4	ϵ_5	ϵ_6	ϵ_7	ϵ_8	ϵ_9	ϵ_{10}	ϵ_{11}
SHARCOOK	.379										
HOUSWORK		.091									
CHLDCARE	.021	-.006	.292								
CCLOTHES	.027		.025	.459							
SCHLWORK	-.014	-.012	-.016	.011	.414						
DISTANCE	.024				.025	.254					
GOAL	-.008			.011		.110	.431				
AFFECTIN		.015				.047		.330			
FPLAN				.110	-.079		.087		.125		
INTERVAL			.012							1.011	
FERTILITY		.047		.030	.056		.051				.335

	WEDUC	ECOSTAT	INTERUPT	RESIDENC	DURMAR
TD	3.018	.426	.189	.574	19.967

biological variables. Table 7.2 provides the correlations among the endogenous concepts, which are in the hypothesized directions. The associations of gender role egalitarianism and biological concepts with fertility are noticeably higher than those of value of children.

7.4.2 Exogenous Variables

Figure 7.2 shows that, except for education, all other variables have significant direct influence on fertility. The standardized coefficients (table 7.2) show that commitment to work has strongest influence on fertility (.442), followed by residence (-.282), duration of marriage (.226) and financial status (-.167). The indirect effects (table 7.1) of these variables are much weaker, thereby allowing us to question the hypothesis that socioeconomic determinants influence fertility through social psychological and biological variables. In the following paragraphs we will examine how these variables are linked to the intermediate variables.

Educational status, surprisingly, has significant direct influence only on rate of childbearing (.581), gender role egalitarianism (GRE1: .040) and subjective benefit of children (-.070). These effects are relatively stronger as shown by the standardized coefficients. These effects suggest, then, that the higher the wife's education, the longer the interval between marriage and first birth (.483), the lower the feeling of benefit resulting from having

children (-.358), and the higher the egalitarianism in sharing household duties (.229). However, the indirect effects of education on subjective cost of children (-.002) and rate of chilbearing (-.141) are not in the expected direction. One possible explanation for these findings is that wives with higher education are likely to be married to partners with similar characteristics, that they are likely to maintain egalitarianism at home and therefore, they may associate a lower cost with having children. In addition, after spending a substantial number of years in schooling, thereby postponing their marriage, these women are likely to have children within a short period after the marriage. In essence, the wife's education operates through the intermediate variables to reduce currently family size. But this effect is relatively small.

The economic status[2] of the husband has significant direct influence on all the variables in the model, except for biological ones. The standardized coefficients reveal that economic status has the strongest influence on fertility (-.167), followed by subjective cost (-.146), gender role egalitarianism (GRE2: .144), subjective benefit (.100) and gender role egalitarianism (GRE1: .085). As husbands' income increases, they are more likely to participate equally in activities related to household and children. Also, they associate greater benefit and lesser cost with having children. The indirect effect of economic

---

[2]This is measured by husband's income. Other proposed measures were found not useful.

status on the rate of childbearing is as expected, but the same cannot be said for fertility planning (-.133). This discepancy could be due to the fact that these respondents may desire smaller family size and therefore may not have used any contraceptives. Note, however, that the data on use of contraceptives in fertility planning do not include information on current use. Hence, it is quite possible that these respondents may have adopted effective contraception after achieving their desired family size. In this case, they may decide to have smaller family size.

The degree of commitment to work[3], measured by number of interruptions, has significant direct influence on fertility (.442), GRE1 (-.308), FPLAN (-.256), and GRE2 (-.223), as shown by the standardized coefficients. Women with lesser commitment to work are more likely to engage in traditional duties. These women can be characterized as less educated and as working in unskilled jobs. Their opportunity costs are likely to be relatively low. Consequently, they may interrupt their work more often and develop a greater taste for household activities. With regard to value of children, although there is no direct effect, the indirect effects suggest that women with lower commitment to work associate greater subjective cost as well as greater benefit with having children. While the latter effect might be understandable, the former is unexpected. This lack of consistency can be attributed to the inability of the

---

[3]Higher score means lower commitment to work.

indicators to differentiate between subjective cost and benefit. This further supports the point made earlier about the inadequacy of these indicators in measuring underlying concepts. Finally, women with lower commitment to work are less likely to use contraceptives in planning fertility and have shorter first birth intervals. Although the indirect effect of commitment on fertility planning is positive (.174), it is not large enough to reduce the magnitude of its total effect (-2.582). In general, as the degree of women's commitment to work decreases, the greater the likelihood that they will have larger family size. This effect is further enhanced through its influence on social psycholgical and biological variables.

The residential status of the respondent in youth has significant direct influence on fertility (-.867) and the subjective cost of children (.352). The findings suggest that respondents from urban or larger cities are more likely to associate a greater cost (.352) and a lower benefit (-.156) with having children. They are also more likely to use contraceptives in planning pregnancies (.095) and to postpone their first birth after marriage (.089). For women in urban areas, these variables operate directly, as well as indirectly, in favour of smaller family size.

The period in union, measured by duration of marriage, has significant direct influence on all endogenous variables, except the subjective cost of children. These effects are relatively stronger, as indicated by the

standardized coefficients. Table 7.1 suggests that as the duration of marriage increases the couples are less likely to maintain egalitarianism at home. Obviously, women married for a longer period of time are likely to be from a generation where the activities related to household and children are traditionally performed by women. It is also evident from the table that as the duration of marriage increases the subjective benefit of children decreases (-.020) while the subjective cost of children increases (.007). This fact reflects, in a way, the seemingly bitter opinions held by these women about their interactions with children. With regard to biological variables, the increase in duration of marriage reduces planning of fertility (-.192) and increases the first birth interval (.032). The indirect effect of duration of marriage on these two variables shows a reverse effect. Overall, the duration of marriage acts directly to increase the current family size and indirectly, through other variables, to reduce the current family size.

In sum, all the exogenous variables, except wife's education, have significant direct influence on fertility. The effects of these variables, both direct and indirect, are as hypothesized, except in the case of duration of marriage. Although the final outcomes of these variables are as predicted, it is valuable to identify how these effects are transmitted through intermediate variables. For example, wife's education influences fertility indirectly through

gender role egalitarianism(1), subjective benefit of children and rate of childbearing; the husband's economic status through social psychological variables; the degree of commitment through gender role egalitarianism and subjective benefit of children; the residential status of the respondent mainly through subjective benefit of children; and finally, the duration of marriage influences fertility through the endogenous variables, except for the subjecti cost of children.

7.5 Discussion and Conclusion

The causal model developed in this chapter builds upon the theory of fertility developed by Bagozzi and Van Loo (1978) and departs from it slightly with the inclusion of proximate determinants. The model tested here is much more complex than those tested by Bagozzi and Van Loo (1978, 1980). It is based on the assumption that it is not sufficient to examine only the impact of social and economic variables on fertility, although this is the traditional practice of sociologists and demographers. Rather fertility decisions depend upon the social exchange/interaction between husband and wife subject to certain external constraints. The rationale being that different households may respond differently to the same economic and normative constraints depending on the needs and attitudes of the spouses, the degree of social exchange between them, and other aspects of the marital and family relationship. Thus,

in the proposed causal model, it is hypothesized that fertility is a direct function of biological and an indirect function of socioeconomic and psychological factors. In other words, family size outcome depends upon the following factors: 1) the degree of planning of fertility; 2) the attitudes of family members toward children; 3) the social exchange between husband and wife, and 4) the socioeconomic constraints surrounding the marital role relationship.

In general, the analysis shows that except for wife's education, the remaining exogenous variables do not support the hypothesis. In other words, the socioeconomic determinants, except wife's education, influence fertility directly as well as indirectly through sociopsychological and biological variables, thereby providing no support for the hypothesis. The most probable explanation for this finding is that the indicators used to measure gender role egalitarianism and the value of children might fail to capture the realm of social psychological processes. A significant portion of variance is contaminated by measurement errors in these variables (Table 7.3). Moreover, the large amounts of structural errors in these constructs, particularly in subjective cost (.909) and gender role egalitarianism1 (.836) indicates the omission of important variables. Nonetheless, a substantial portion of effects of socioeconomic determinants on fertility is mediated through sociopsychological and biological variables. However, the hypothesis of Bagozzi and Van Loo (1980) that

sociopsychological factors directly influence fertility does not hold true. Evidently, the effects of sociopsychological constructs within and between other constructs are mixed. For example, on the one hand, gender role egalitarianism, related to household activities, acts through other variables to increase fertility. On the other hand, gender role egalitarianism, related to children's activities, acts through other variables to reduce fertility.

With few exceptions, the causal connection between the variables is in the expected direction. But the data provide very little support for the proposed general hypothesis. As indicated earlier, socioeconomic variables continue to play a dominant role in explaining variation in fertility. The lack of contribution made by sociopsychological variables cannot be attributed to the process *per se*, but rather to its indicators selected for measuring the constructs. Many of these indicators, however, are either used or suggested by previous researchers (eg. Scanzoni, 1976). Therefore, we need to develop better measures to understand psychological processes within the family. A study without social psychological factors in either theory or empirical work may lead to a distorted view of the fertility process (Turchi, 1978). The causal model tested here provides some support for Turchi's statement. Although the present model explains about 80% of the variance in fertility, there remains a growing need to create and refine measures that would enable us to better understand the role of sociopsycholgical

factors in fertility decision-making processes.

7.6 Analysis of subgroups

Despite the feeling among researchers in Canada that fertility differentials by ethnicity, religion and region are narrowing (see chapter 4), these differences are still noticeable. Therefore, the intent of this section is to examine the contributions, if there is any, of socioeconomic, psychological and biological factors to these differences. To do so, one could conduct LISREL analysis separately for each of the groups in question. But this would be expensive in terms of computer time use. Therefore, regression decomposition analysis will be used instead (see chapter 4 for the procedure). In this analysis, composite indices will be used to measure a given dimension in place of single indicators, wherever appropriate. Further, the variables relevant to but not included in the causal model (fig 7.2) will also be considered for the analysis.

7.6.1 Ethnic Differences

Table 7.4 presents means and standard deviations of selected variables by ethnic groups and marriage duration classifications. Most of these variables are used in the causal model discussed earlier. However, three new variables--province, religion, and age at marriage--are added, because of their importance in studying fertility differentials. These variables can be grouped under the

Table 7.4 Means and standard deviations for study variables by marriage duration and ethnicity.

	LE 13 yrs			14 + yrs		
	British	French	Others	British	French	Others
FERTILITY	.909	.219	.084	.179	.330	.276
	(.778)	(.868)	(.916)	(1.316)	(1.165)	(1.343)
RESIDENC	2.1470	1.8670	2.1970	2.0600	1.8330	2.0610
	(.778)	(.792)	(.810)	(.809)	(.801)	(.807)
WEDUC	13.1370	12.6520	13.0860	12.4550	10.6010	12.0080
	(2.541)	(2.556)	(2.601)	(2.836)	(3.053)	(2.986)
INTERUPT	2.4360	2.4240	2.3630	2.5690	2.5710	2.4740
	(.813)	(.806)	(.835)	(.797)	(.847)	(.835)
FINSTAT	4.4790	4.6530	4.4740	4.4410	4.6570	4.4740
	(.779)	(.851)	(.862)	(.841)	(.858)	(.826)
GRE	2.5270	3.0170	2.7510	2.0240	2.0970	1.9100
	(1.451)	(1.496)	(1.515)	(1.338)	(1.454)	(1.263)
COSTBENFIT	-.5330	-1.0040	-.6640	-.3690	-.8510	-.4970
	(1.064)	(1.045)	(.969)	(1.162)	(1.068)	(1.023)
AGEMAR	21.6390	21.6840	21.7950	20.2210	20.8340	20.5990
	(3.337)	(2.879)	(3.476)	(2.798)	(3.102)	(2.902)
FPLAN	.7740	.8420	.7680	.6900	.7240	.7080
	(.333)	(.273)	(.337)	(.335)	(.324)	(.323)
INTERVAL	2.6730	2.3540	2.6180	2.5330	1.8170	2.2270
	(3.104)	(2.373)	(2.877)	(3.230)	(2.783)	(2.825)

following broad categories: 1) background/structural factors (province, residence, and religion); 2) economic factors (wife's education, interruptions, and financial status[4]); 3) sociopsychological factors (gender role egalitarianism and cost-benefit of children), and 4) biological factors (fertility planning, birth interval, and age at marriage). A number of other variables were considered for the analysis but found not significant (for example, nativity, husband's relative income, husband's occupation and family income). The variables province and religion are coded as dummy variables. Respondents living in the Atlantic provinces are assigned a value of 1 and those living elsewhere in Canada a value of 0. Similarly a value of 1 is assigned to Catholics and a value of 0 to others.

It is evident from table 7.4 that average family size is higher for French respondents than for British. The difference is more pronounced for respondents married longer than 14 years (-.151). Among respondents in the 'other' category, average family size is lower than the British for those married less than 13 years (.067) while it is higher for those married longer than 14 years (-.097). The difference in average family size between the British and the French and others can be attributed to differences in variable level means. For example, the factors apparently conducive to higher fertility among the French include:

---

[4] Financial status is computed as a combination of financial success and standard of living. A higher score means higher financial status or economic well-being.

growing up in less urbanized areas, lower education, lesser psychic cost of children, and shorter first birth interval. Among respondents in the 'other' ethnic group, factors such as lower number of work interruptions, greater gender role egalitarianism and higher age at marriage act to keep their fertilty level lower than the British for recently married women. On the other hand, lower education, lesser psychic cost of children and shorter birth interval in the 'other' ethnic group may serve to raise the respondents' fertility level above the British for women married longer than 14 years. However, we need to examine the hypothesis that the difference in average family size by ethnic groups is due to their differences in variable level means. In testing this, we keep the British as the reference group.

Table 7.5 presents the results of multiple regression analysis. In addition to metric and standardized coefficients, the Pearson's correlation coefficients are also given. Among respondents married for less than 13 years, number of interruptions, gender role egalitarianism, age at first marriage, and first birth interval exert significant influence on fertility for all three ethnic groups; residence is important for the French (-.119), and others (-.092), and cost-benefit for the French (-.075), in explaining variations in current family size. Age at first marriage and first birth interval are significant in all three ethnic groups among women married 14 or more years. In addition to these two variables, gender role egalitarianism

Table 7.5 Multiple regression analysis of current family size by ethnicity and marriage duration.

	INTERCEPT		RESID	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years												
		b.	.023	.018	.143 (****)	.028	-.098 (****)	.009	-.128 (****)	.107	-.149 (****)	.533
BRITISH	2.715											
N= 407		B.	.020	.051	.128	.025	-.156	.010	-.469	.039	-.509	
		r.	-.052	-.325	.323	.045	-.289	-.080	-.425	-.068	-.525	
		b.	-.130 (****)	.0001	.151 (****)	.009	-.089 (****)	-.062 (*)	-.107 (****)	-.087	-.151 (****)	.405
FRENCH	3.009											
N= 354		B.	-.119	.0004	.140	.009	-.154	-.075	-.355	-.027	-.413	
		r.	-.164	-.253	.251	-.060	-.238	-.090	-.348	-.148	-.436	
		b.	-.105 (****)	-.001	.152 (****)	.016	-.125 (****)	-.009	-.105 (****)	-.012	-.143 (****)	.476
OTHERS	2.906											
N= 617		B.	-.092	-.003	.138	.015	-.206	-.010	-.399	-.004	-.448	
		r.	-.177	-.300	.249	-.002	-.350	-.059	-.372	-.131	-.452	
14 + years												
		b.	.117 (*)	-.037 (*)	.083	-.121 (*)	-.140 (****)	-.049	-.136 (****)	.003	-.135 (****)	.281
BRITISH	4.079											
N= 435		B.	.072	-.080	.050	-.077	-.142	-.044	-.289	.0008	-.332	
		r.	-.018	-.323	.107	-.074	-.179	-.063	-.321	-.167	-.377	
		b.	-.080	.008	.199 (****)	-.029	.009	-.084	-.117 (****)	-.542 (****)	-.172 (****)	.310
FRENCH	3.082											
N= 305		B.	-.055	.020	.145	-.021	.012	-.077	-.313	-.151	-.412	
		r.	-.123	-.202	.130	-.063	.004	-.079	-.266	-.236	-.395	
		b.	-.106 (*)	.002	.191 (****)	-.159 (****)	-.020	-.030	-.087 (****)	.144	-.170 (****)	.210
OTHERS	2.792											
N= 566		B.	-.064	.005	.119	-.098	-.019	-.023	-.187	.034	-.357	
		r.	-.121	-.159	.128	-.128	-.066	-.016	-.209	-.067	-.386	

(-.142), wife's education (-.080), financial status (-.077), and residence (.072) are important in explaining variation in fertility for the British; number of interruptions (.145) for the French; and number of interruptions (.119), financial status (-.098) and residence (-.064) for the 'others' category. Not surprisingly, the effect of education is significant (barely) only on one occasion. This is due to the fact that its effect is confounded by age at first marriage.[5] The regression equations explain a moderate amount of variance in fertility, but less so for respondents married longer than 14 years.

Table 7.6 presents the results of the regression decomposition analyses. The subtotals for component A suggest that the adjustment for differences in variable level means would result in reduction of fertility, except for respondents in the 'others' category married fewer than 14 years. The effects of particular variables in the decomposition suggest that residence, cost-benefit of children, birth interval and gender role egalitarianism are relevant for French women married less than 14 years. For the first three variables, equalization leads to a decline in fertility, while for gender role egalitarianism equalization it increases. Among the French respondents married for 14 or more years, equalization of education (-.0274), cost-benefit (-.0321) and birth interval (-.1102) serve to reduce fertility, while the equalization of age at

---

[5]Analysis without AGEMAR in the regression equation produced significant influence of education on fertility

Table 7.6 Regression decomposition of current family size (net age) by ethnicity

	LE 13 yrs		14 + yrs	
	French	Other	French	Other
Actual difference (British-Others)	-.068	.067	-.151	-.097
Variable levels (A)				
RESIDENC	-.0151	.0021	.0042	.0000
WEDUC	.0045	.0004	-.0274	-.0078
INTERUPT	.0018	.0108	-.0003	.0130
FINSTAT	-.0032	.0001	.0162	.0046
GRE	.0458	.0249	.0048	-.0091
COSTBENFIT	-.0125	.0000	-.0321	-.0051
AGEMAR	.0053	.0182	.0777	.0421
FPLAN	-.0007	.0003	.0092	-.0013
Subtotal	-.022	.049	-.058	-.010
Differences between intercepts	-.294	-.191	.997	1.287
Variable effects (B) (Interaction ethnicity with variables)				
RESIDENC	.1203	.1014	.1584	.1805
WEDUC	.0464	.0499	-.1311	-.1143
INTERUPT	-.0063	-.0071	-.0953	-.0880
FINSTAT	.0159	.0098	-.0780	.0321
GRE	-.0125	.0400	-.2084	-.1556
COSTBENFIT	.0748	.0186	.0382	-.0215
AGEMAR	-.0642	-.0769	-.0549	-.1411
FPLAN	.0585	.0396	.1795	-.0462
INTERVAL	.0060	-.0185	.1113	.1040
Subtotal	.239	.157	-.080	-.250
Unmeasured (D)	.009	.052	-1.010	-1.124
Total	-.068	.067	-.151	-.097

marriage produces significant increase of fertility (.0777). On the other hand, gender role egalitarianism, age at marriage, and, to some extent, number of interruptions are important for respondents in the 'other' category married for less than 14 years. Equalization in all the variables acts to increase fertility. Similar adjustments for respondents married 14 years or longer show that age at marriage and number of interruptions serve to increase fertility while the adjustment for birth interval has the opposite effect. In general, the equalization of variable means to those of the British produces a significant reduction in fertility for the French and more so for respondents married for 14 years or longer. With regard to respondents in the 'other' ethnic group, such adjustments produce a slight reduction in fertility for respondents married longer than 14 years. The reverse holds true for their counterparts.

Component C, the difference between intercepts, exhibits the main effect or the effect of ethnicity *per se* on fertility. The results indicate that the independent effect of ethnicity is to raise fertility for respondents married fewer than 14 years, while it serves to lower fertility for their counterparts. The effect of ethnicity on fertility is much stronger for those married for a longer period of time. Ethnicity alone would decrease the fertility of the French and 'others' by 1.00 and 1.29 respectively, for those in consensual union for 14 or more years. On the

other hand, it is interesting to note that ethnicity serves to increase the fertility of the French (-.294) and 'others' (-.191) among recently married women. However, the final outcome (i.e. the actual difference in family size between the British and 'other' ethnic groups) in three of the four categories are different from what the ethnic effect or main effect suggests. This difference, then, implies that in addition to ethnicity there may be other factors operating to produce a given family size for a particular ethnic group.

The interaction component B is relatively smaller than the main effect of ethnicity, and more so for respondents married for 14 years or longer. The subtotals reveal that ethnicity interacts with other variables to reduce fertility for respondents married 14 or more years and to increase fertility for more recently married women. Among the respondents married less than 14 years, residence, education, cost-benefit, fertility planning, gender role egalitarianism (for the 'other' ethnic group) and age at marriage are more important factors. Except for age at marriage, the remaining five variables interact with ethnicity to increase average family size. For respondents married 14 or more years, all the variables exhibit significant interactions. The results also suggest that even though residence, fertility planning and birth interval interact strongly to increase fertility, their influence is overshadowed by the negative effect of remaining variables

for the French women. Similarly, for the respondents classified under the 'other' ethnic group, residence, financial status, and birth interval are the only variables appearing to have positive influence on fertility. Note, however, that residence and birth interval serve systematically to increase fertility in both the French and 'other groups. On the other hand, education, interruptions, gender role egalitarianism and age at marriage interact consistently with ethnicity to decrease average family size. Thus, an understanding of the effects of individual variables is important, even though the outcomes of the interactions are negligible.

The unmeasured component D, although it has no substantive interpretation, appears to be substantial for women married 14 or more years, whereas for women married less than 14 years this component is almost nonexistent. Furthermore, the error component is negatively related to fertility for the former and positively for the latter.

The data presented in this study demonstrate that ethnicity has different consequences for women married recently than for those married for a longer period of time. Most surprisingly, the evidence suggests that ethnicity *per se* not only increases fertility, but interacts with other variables to maintain higher levels of reproduction than the British for recently married women. However, the current family size provides support only for the French women. For women in the 'other' ethnic group, the fertility level is

relatively lower than that of the British. These differences can be attributed to lower variable means for the French and higher variable means for the others in relation to the British. The equalization of variable means to those of the British, however, produces only minor adjustments.

Among the respondents married 14 or years or longer, ethnicity *per se* serves to lower fertility and interacts with other variables to maintain a lower level of fertility. The current family size for this group of women, however, seem to be higher than for the British. Furthermore,the equalization of variable means to those of the British are not large enough to attribute the observed difference to the differences in the variable levels. Consequently, a substantial portion of variance remains unexplained.

7.6.2 Religious Differences

Table 7.7 presents means and standard deviations of all the variables in the analysis by religion and marital duration. Catholics, in general, have higher average family size than non-Catholics. Moreover, the difference between these two religious groups is relatively larger for those married 14 or more years (.108) than for those married less than 14 years (.011). With regard to variable means, non-Catholics score relatively higher on residence, education and birth interval, whereas Catholics score higher on fianancial status, gender role egalitarianism, cost-benefit of children, age at marriage and fertility

Table 7.7 Means and standard deviations for study variables by marriage duration and religion.

	LE 13 yrs		14 + yrs	
	CATH	N-CATH	CATH	N-CATH
FERTILITY	.161	.150	.305	.197
	(.882)	(.927)	(1.370)	(1.200)
RESIDENC	1.9960	2.1520	1.9360	2.0540
	(.808)	(.799)	(.809)	(.810)
ATLANTIC	.0960	.0990	.0920	.0890
	(.295)	(.299)	(.290)	(.285)
WEDUC	12.5640	13.1320	10.9920	12.3880
	(2.559)	(2.582)	(2.992)	(2.888)
INTERUPT	2.4140	2.4160	2.5610	2.5130
	(.830)	(.835)	(.843)	(.811)
FINSTAT	4.6220	4.4300	4.5760	4.4550
	(.843)	(.847)	(.864)	(.819)
GRE	2.9580	2.6340	2.1030	1.9290
	(1.518)	(1.481)	(1.424)	(1.260)
COSTBENEFIT	-.9330	-.5620	-.7920	-.3380
	(1.000)	(1.035)	(1.027)	(1.101)
AGEMAR	21.7860	21.5810	20.8510	20.2560
	(3.193)	(3.360)	(2.993)	(2.806)
FPLAN	.8100	.7700	.7170	.7030
	(.307)	(.331)	(.325)	(.329)
INTERVAL	2.2960	2.6420	1.8720	2.4900
	(2.588)	(3.018)	(2.530)	(3.200)

planning (particularly for women married less than 14 years). These differences in variable means suggest that we may able to explain some of the observed fertility differences between these two groups through standardization.

Table 7.8 exhibits results of multiple regression analysis. Of all the independent variables, number of interruptions, gender role egalitarianism, age at marriage, and birth interval stand out as having the strongest effects on fertility. Among Catholic women married less than 14 years, residence and province are the only additional significant variables. Province, financial status, cost-benefit and fertility planning are the significant variables for Catholic women married 14 or more years. For the non-Catholics, surprisingly, the use of contraceptives in planning of fertility increases the current family size significantly. Wife's education is the only variable that appears to be not significant for any of the religious groups. The regression equations explain a moderate amount of variance in fertility for recently married women but less so for their counterparts.

The subtotals for component A from the decomposition analysis (table 7.9) suggest that equalization of variable means of the non-Catholics to those of the Catholics would increase fertility, and to a greater degree among women married 14 or more years. Closer examination of individual contributions made by the variables demonstrates the

Table 1. .iple regression analysis of current family size by religion and marriage duration.

	INTERCEPT		RESID	ATLANTIC	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years													
CATHOLIC	2.648	b.	-.122 (****)	.159 (*)	-.002	.133 (****)	.020	-.095 (****)	-.017	-.095 (****)	.026	-.144 (****)	.423
N= 745		B.	-.112	.053	-.007	.125	.019	-.163	-.019	-.343	.009	-.422	
		r.	-.179	.114	-.253	.265	-.020	-.288	-.042	-.351	-.145	-.464	
N-CATH	3.198	b.	-.037	-.120	.014	.161 (****)	.002	-.117 (****)	.002	-.134 (****)	.073	-.154 (****)	.523
N= 803		B.	-.032	-.039	.039	.146	.002	-.187	.003	-.484	.026	-.501	
		r.	-.091	.043	-.324	.288	-.016	-.313	-.049	-.423	-.090	-.474	
14 + years													
CATHOLIC	3.212	b.	.006	.817 (****)	.021	.199 (****)	-.158 (****)	-.059 (*)	-.098 (**)	-.109 (****)	-.449 (****)	-.193 (****)	.287
N= 664		B.	.003	.172	.046	.123	-.100	-.062	-.074	-.239	-.107	-.357	
		r.	-.056	.242	-.127	.149	-.150	-.059	-.035	-.226	-.203	-.380	
N-CATH	3.100	b.	-.050	.197	-.023	.085 (*)	-.050	-.065 (**)	-.026	-.112 (****)	.270	-.131 (****)	.245
N= 753		B.	-.033	.047	-.056	.058	-.034	-.069	-.024	-.262	.074	-.349	
		r.	-.118	.103	-.266	.088	-.034	-.117	-.041	-.294	-.069	-.384	

Table 7.9 Regression decomposition of current family size (net age) by religion.

	LE 13 yrs	14 + yrs
Actual difference (Catholics - non-Catholics)	.011	.108
Variable levels (A)		
RESIDENC	.0124	.0026
ATLANTIC	-.0001	.0015
WEDUC	-.0033	.0015
INTERUPT	-.0003	.0068
FINSTAT	.0021	-.0126
GRE	-.0344	-.0109
COSTBENEFIT	.0027	.0282
AGEMAR	-.0234	-.0658
FPLAN	.0020	-.0013
INTERVAL	.0515	.1003
Subtotal	.009	.050
Differences between intercepts (C)	-.550	.112
Variable effects (B) (Interaction: religion with variables)		
RESIDENC	-.0686	.0448
ATLANTIC	.0829	.1782
WEDUC	-.0426	.1310
INTERUPT	-.0240	.0943
FINSTAT	.0153	-.0908
GRE	.0335	.0089
COSTBENEFIT	-.0194	-.0764
AGEMAR	.1268	.0070
FPLAN	-.0151	-.2352
INTERVAL	.0277	-.1789
Subtotal	.116	-.117
Unmeasured (D)	.436	.063
Total	.011	.108

presence of offsetting effects. Among the recently married women, equalization of residence (.0124) and birth interval (.0515) raises fertility, while equalization of gender role egalitarianism (-.0344) and age at marriage (-.0234) decreases fertility. Similarly, among the women married 14 or more years, financial status (-.926), gender role egalitarianism (-.0109) and age at marriage (-.0658) act to decrease fertility; the cost-benefit of children (.0282) and birth interval (.1003) serve to increase fertility. Incidentally, the non-Catholics have lower current fertility than the Catholics, but their fertility level can be reduced further if adjustments are made on some of the variables. Note, however, that the longer first interval and the greater cost associated with children among the non-Catholics seem to be the crucial factors in their current low level of fertility.

The main effect of religion is to increase fertility for the recently married (-.550) and to decrease it for those married longer than 14 years (.112). This finding is rather unexpected. One would normally expect the respondents married for 14 or more years to have been married at a younger age than the recently married, and to hold pronatal values. But this does not seem to be the case for the present study. Surprisingly, the effect of religion *per se* is substantial for the recently married non-Catholics and serves to increase their fertility. However, their current family size is relatively lower than the Catholics'. This

means that there may be other factors operating to maintain their current low level of fertility.

The interaction component B also produces results similar to those of the main effect of religion. The subtotals of the interaction component suggest that religion interacts with other variables in the model to increase fertility for the recently married (.116) and to decrease it for those married for a longer period of time (-.117). Among the recently married women, the interaction effects of residence, education, gender role egalitarianism and age at marriage are relatively greater. The first two variables serve to raise the average family size for the non-Catholics. The next three variables act to reduce average family size. On the other hand, among the women married 14 years or longer, all the variables, except gender role egalitarianism and age at marriage, exhibit strong interaction effect with religion. Note, however, that only four of these variables--financial status, cost-benefit of children, fertility planning and birth interval--interact to reduce fertility. There are some differences between the recently married and their counterparts in terms of the interaction effect of a given variable. Residence, for example, interacts with religion to reduce fertility for the recently married (-.0686), while it increases fertility for those married 14 or more years (.0448). A similar situation emerges for education and interruptions. Financial status and birth interval serve to lower the fertility of those

married for a longer period of time; but the opposite is true for the recently married women. Interestingly enough, evidence suggests that for respondents in the Atlantic provinces religion interacts to increase fertility, irrespective of marital duration.

In sum, the analysis suggests that equalization of variable means produces very minor adjustments. Surprisingly, for the recently married women religion *per se* not only serves to increase fertility but interacts with other variables to raise fertility. The reverse holds true for respondents spending a longer period of time in marital union. Evidently, the results indicate that a substantial portion of variance remains unexplained for the recently married women. This unmeasured component is almost negligible for those in longer marital union.

7.6.3 Regional Differences

In Canadian fertility studies, region plays an important role in understanding fertility differentials. Although regional differences in fertility appear to be narrowing, they remain noticeable. For example, the eastern regions, Saskatchewan, and the Yukon and Northwest Territories have fertility levels above the national average. Researchers have documented these regional differences (Balakrishnan et al., 1979; Henripin, 1972; Mathews, 1976; Trovato and Halli, 1983). The aim of this section is to develop an understanding of the role of

economic, sociopsychological and biological variables in fertility differences between the Atlantic provinces and the rest of Canada.

Table 7.10 presents means and standard deviations of the variables in the analysis by region and marital duration. It is quite evident from the table that Atlantic women have relatively higher average family size than women living elsewhere in Canada. Moreover, the difference is greater for women married 14 years or longer (.773) than for for recently married women (.232).

Atlantic women, in general, are less educated, live in less urbanized areas, interrupt their work more often, feel less economically successful and have a poorer standard of living than other Canadian women. They also maintain lower egalitarianism at home and associate a lower subjective cost with having children. In addition, Atlantic women marry at a relatively younger age, use contraceptives less often in planning their pregnancies, and are likely to have a shorter first birth interval than women outside this region. Essentially, all these indicators promote higher fertility in the Atlantic region.

The results of multiple regression analysis (table 7.11) show that interruptions, gender role egalitarianism, age at marriage, and birth interval are significant in all four equations. Residence appears to be significant only for the recently married women. Note also that religion seems to be one of the strongest predictors for Atlantic women. It

Table 7.10 Means and standard deviations for study variables by marriage duration and region

	LE 13 yrs		14 + yrs	
	CANADA	ATLANTIC	CANADA	ATLANTIC
FERTILITY	.133 (.904)	.365 (.899)	.177 (1.173)	.950 (1.958)
RESIDENC	2.1010 (.811)	1.8530 (.735)	2.0240 (.816)	1.7510 (.176)
CATHOLIC	.4820 (.500)	.4740 (.501)	.4680 (.499)	.4770 (.501)
WEDUC	12.9410 (2.577)	12.0930 (2.551)	11.7860 (3.037)	11.2100 (2.780)
INTERUPT	2.4030 (.823)	2.5200 (.905)	2.5140 (.813)	2.7540 (.924)
FINSTAT	4.5230 (.852)	4.5140 (.833)	4.5150 (.834)	4.4770 (.923)
GRE	2.8030 (1.513)	2.6700 (1.455)	2.0130 (1.340)	1.9790 (1.365)
COSTBENFIT	-.7360 (1.038)	-.7850 (1.010)	-.5480 (1.100)	-.5770 (.990)
AGEMAR	21.7500 (3.310)	21.0390 (2.939)	20.5850 (2.929)	20.0340 (2.663)
FPLAN	.7930 (.319)	.7580 (.326)	.7130 (.328)	.6690 (.319)
INTERVAL	2.5420 (2.813)	1.8620 (2.858)	2.2750 (2.959)	1.4540 (2.390)

Table 7.11 Multiple regression analysis of current family size by region and marriage duration

	INTERCEPT		RESID	CATH	WEDUC	INTERUPT	FINSTAT	GRE	COSTBENFIT	AGEMAR	FPLAN	INTERVAL	R SQR
LE 13 years													
ATLANTIC	3.151	b.	-.193 (****)	.296 (****)	-.009	.157 (***)	-.010	-.141 (****)	.028	-.111 (****)	.175	-.108 (****)	.529
N= 152		B.	-.158	.165	-.025	.158	-.010	-.228	.032	-.364	.063	-.342	
		r.	-.235	.110	-.403	.419	-.029	-.391	-.107	-.452	-.121	-.451	
CANADA	2.941	b.	-.070	-.030	.005	.147 (****)	.016	-.100 (****)	-.011	-.115 (****)	.041	-.153 (****)	.469
N= 1396		B.	-.063	-.016	.014	.134	.015	-.167	-.013	-.421	.014	-.477	
		r.	-.116	-.005	-.272	.258	-.015	-.288	-.039	-.381	-.111	-.467	
14 + years													
ATLANTIC	6.810	b.	.157	.622 (***)	-.013 (*)	.267 (****)	-.606 (*)	-.185	-.045 (****)	-.179	.219 (****)	-.362	.474
N= 128		B.	.058	.159	-.018	.126	-.286	-.129	-.023	-.244	.036	-.442	
		r.	.023	.193	-.380	.204	-.380	-.158	-.094	-.192	-.260	-.544	
CANADA	2.721	b.	-.050	.003	.003	.120 (****)	-.040	-.043 (**)	-.051 (*)	-.106 (****)	-.051	-.138 (****)	.212
N= 1289		B.	-.034	.001	.008	.083	-.029	-.049	-.047	-.266	-.014	-.348	
		r.	-.090	.017	-.169	.091	-.037	-.072	-.039	-.262	-.112	-.360	

indicates that Catholic women living in Atlantic provinces are likely to have more children than women living elsewhere in Canada. Economic status is the second strongest predictor for Atlantic women married 14 or more years. Overall, the variables in the analysis explain a moderate amount of variance in current family size, except for those living elsewhere in Canada and married for 14 or more years.

The subtotals of component A suggest that there would be a fertility reduction of .232 and .335 for Atlantic women recently married and married for 14 or more years, respectively, if their variable levels were equalized to the means of women elsewhere in the country (Table 7.12). The variables most likely to contribute to the reduction for most recently married women are residence (-.0327), age at marriage (-.0805), birth interval (-.0887) and, to a certain extent, work interruptions (-.0175) and gender role egalitarianism (-.0160). Similarly, among the women married 14 or more years, interruptions (-.0465), age at marriage (-.0787), birth interval (-.2052) and economic status (-.0123) are likely to reduce fertility. Note, however, that equalization of residence (.0147) increases the fertility for this group of women. It is evident from the table that adjustment for age at marriage and birth interval alone would substantially reduce fertility for Atlantic women, irrespective of marital duration.

Component C suggests that, in comparison to the rest of Canada, the independent effect of residence in the Atlantic

Table 7.12 Regression decomposition of current fertility (net age) by region

	LE 13 yrs	14 + yrs
Actual difference (Canada-Atlantic)	-.232	-.773
Variable effects (A)		
RESIDENC	-.0327	.0147
CATHOLIC	.0011	-.0028
WEDUC	-.0017	-.0028
INTERUPT	-.0178	-.0465
FINSTAT	.0000	-.0123
GRE	-.0160	-.0039
COSTBENFIT	.0004	-.0014
AGEMAR	-.0805	-.0787
FPLAN	.0038	.0037
INTERVAL	-.0887	-.2052
Subtotal	-.232	-.335
Differences between intercepts (C)	-.210	-4.089
Variable effects (B) (Interaction: region with variables)		
RESIDENC	.0948	-.1585
CATHOLIC	-.1629	-.3096
WEDUC	.0349	.0452
INTERUPT	-.0093	-.1275
FINSTAT	.0218	.4969
GRE	.0611	.1923
COSTBENFIT	-.0405	-.0061
AGEMAR	-.0112	.2038
FPLAN	-.0433	-.0871
INTERVAL	-.1295	.5995
Subtotal	-.184	.849
Unmeasured (D)	.393	2.802
Total	-.232	-.773

region serves to raise fertility by .210 of a child for recently married respondents and by 4.089 for those married 14 years or longer. The magnitude of the regional effect is substantial in the latter case. Moreover, this effect for the second group is greater than the subtotals of component A, thus indicating that there may be other factors responsible for this region's higher fertility.

As per the interaction component, the subtotals reveal that region interacts with other variables to reduce average family size for the recently married (-.184), while it interacts to raise family size for those married 14 or more years. The effects of individual variables show that the interactions are substantial for all the variables, except for interruptions and age at marriage among the recently married, and cost-benefit of children for those married 14 or more years. For the recently married women, religion, cost-benefit, fertility planning and birth interval interact with region to reduce fertility, while residence, education, financial status and gender role egalitarianism serve to raise family size. Similarly, among women married for 14 or more years, residence, religion, work interruptions and fertility planning act to lower fertility, while education, financial status, gender role egalitarianism, age at marriage, and birth interval serve to raise fertility. The latter interaction effects are much stronger than those for the recently married women.

The unmeasured component is higher than any other for the recently married women (.393), whereas among the women married 14 or more years, it ranks second (2.502) to the main effect of region, but is still substantial. In both groups, these unmeasured factors would enable Atlantic women to have higher fertility.

In general, the findings suggest that equalization of variable means would lead to fertility reductions among the Atlantic females. Region by itself serves to raise fertility, but more so women married for 14 years or longer; it also interacts with other variables to increase the fertility of the latter and to decrease the fertility of recently married women.

Chapter 8

Summary and Conclusions

8.1 Summary of the Thesis

The major objectives of this thesis have been to identify crucial fertility determinants and to develop a causal model of these determinants for women in Canada. Such an inquiry might provide valuable information not only to demographers, but also to politicians concerned with declining fertility. They are concerned with the question of why people want to have any children, rather than with the traditional question of why people want to have more. Answers to these questions hold important socioeconomic and demographic consequences. Therefore, from a policy point of view, it is necessary to identify the variables involved in fertility decision-making before offering any policy suggestions. More specifically, one needs to develop theoretical models to study the determinants of fertility in couples' decision-making processes. These will enhance our understanding of current fertility in Canada and its prospects for the immediate future.

At the theoretical level, the determinants of fertility involve a plethora of variables, many of which are difficult to define and virtually impossible to measure. Nevertheless, scholars from several disciplines have attempted to develop a comprehensive theoretical framework including all relevant variables. Theories from economics, sociology, and

demography focus on the constraining role of environment. Psychological theories begin with people's needs, motives or other mental events to model the primary antecedents of fertility. Among anthropological approaches, several discuss fertility determinants at the societal or cultural level with no reference to couples making decisions, while others focus specifically on these decisions. But none of these theories can be described as a 'theory of fertility'. Therefore, in this thesis no attempt is made to test any particular framework; rather, information available from various frameworks is used to select variables and develop a causal model for the determinants of fertility.

The data for the analysis are taken from the Canadian Fertility Survey, which was conducted from April to June of 1984. The target population was women of all marital statuses in their reproductive years of 18-49, who were accessible by means of a residential telephone number and able to converse over the phone in either French or English. The survey was carried out using centralized telephone interviews in a random sampling of the population chosen according to a two-stage probability selection process. The final sample included 5,315 women with a response rate of 70 percent.

The primary dependent variables used in the analysis are current and expected family size. The sample means of these two variables are 1.98 and 2.43 respectively. Current family size is simply the respondent's total number of live

births. Expected family size is the number of live births plus additional births expected. These two measures have also been adjusted for age by measuring each women's fertility as a deviation from the mean of her age. The independent variables considered for the analysis are grouped into four broad categories: background/structural, economic, sociopsychological, and biological factors.

The analysis involves the use of several techniques in order to achieve the objectives of this thesis. Because of the level of measurement of variables available for the analysis, the first and most predominantly used technique is multiple classification analysis. This technique is used both in bivariate and multivariate analysis to assess the contribution made by individual variables as suggested by a particular theoretical approach. The second technique employed is multiple regression analysis, more specifically, regression decomposition analysis. The rationale for using this technique is to examine fertility differentials by ethnicity, religion, and region. The third technique adopted is LISREL, which is used for the analysis of linear structural relationships. Essentially, this technique allows us to build models closer to the real world.

Chapter 4 examines the relationship between background or structural factors and fertility. It is traditional in demography and sociology to first look at differences on the basis of structural factors. Some researchers feel that structural explanations are inadequate, while others feel

that fertility differentials caused by these factors have narrowed, particularly in recent years. In order to verify this opinion, the following variables have been selected: ethnicity, religion, nativity, residence in youth, education, and family income. These are the variables that have been used most frequently and successfully in Canadian fertility studies. The literature available indicates the prevalence of fertility differentials by structural factors. The Canadian studies show significant inverse relationship between education and fertility. The British group appears to have higher fertility followed by the French and other Europeans. The foreign-born have fewer children than those born in Canada. The Catholics have higher fertility than the non-Catholics; but the differences are relatively smaller than those reported in earlier studies. Fertility differentials by residence and income provide inconclusive evidence in Canadian studies.

The results from bivariate analysis of structural factors demonstrate that education and income continue to play important roles in explaining fertility behaviour. Further, the fertility differentials by religion and ethnicity are relatively smaller, while those by nativity and residence are substantial. These findings remain unchanged even after adjustments for duration of marriage.

The multivariate analysis of structural factors, on the other hand, indicates significant interaction of ethnicity with religion, residence, and women's education, and

religion with nativity and women's education. As a result, ethnicity and religion are combined, and regression decomposition analysis is conducted for ethno-religious groups by using the remaining variables in the model. The British are used as the reference group in the analysis.

The decomposition analysis suggests that the equalization of socioeconomic and demographic characteristics of all the ethnic groups to those of the British would serve to lower fertility among the western Europeans, but would increase it for eastern Europeans and others. Such an adjustment, however, accounts for only a small portion of the variation in fertility. Hence, the fertility differentials between the British and other ethnic groups may not be due merely to differences in socioeconomic and demographic characteristics. The main effect of ethno-religion is overwhelming, and in most cases it is to lower the fertility. This in turn implies that the various norms and values associated with a given group favour smaller family size in relation to the British. Also, ethno-religion interacts systematically with education and duration of marriage to reduce fertility. However, a substantial portion of variance in fertility remains unexplained in the analysis.

In general, the structural factors account for only a small portion of variance in fertility. Religion has a significant influence on fertility when other factors are held constant. However, when religion is combined with

ethnicity, the results show that the average number of children is higher for Catholics in three groups (British, German, and 'Other') than for non-Catholics. Nativity appears to be an important factor for eastern Europeans and 'others', whereas, woman's education and her family income exert strong influence on fertility but vary in magnitude across the groups. The regression decomposition analysis suggests that ethno-religion by itself has significant influence on the various ethnic groups in maintaining their fertility below the level of the British. However, the structural model, even in a heuristic manner, does not capture the realm of how these factors are translated into reduced or increased fertility, as indicated by the substantial amount of unexplained variance.

The role of economic factors in fertility is discussed in chapter 5. The economic approach, in general, claims that fertility decisions are reached through a consideration of relative preferences for children (as compared to other consumer goods), direct and indirect (opportunity) costs of children, and the couple's standard of living. The review of empirical findings on economic factors produces mixed results, but there is a general consensus that these factors do account for a certain amount of variation in fertility. This is particularly true when economic status is measured by potential or relative income rather than by current income. The dependent variables for the analysis include current and expected family size. The independent variables

employed in the analysis are wife's education, husband's education, wife's income, husband's occupational status, family income and work interruptions. In addition, subjective measures, such as couple's standard of living in relation to others, their financial status, their financial plans for the future, and their savings, are also included as proxy variables in order to assess economic well-being.

The examination of bivariate relationships reveals that wife's characteristics, such as education, income, and work interruptions excel in their influence on current family size in comparison to husband's characteristics. Exceptions to this generalization appear to be husband's education and occupation. The subjective measures show the expected inverse relationship with fertility. These measures contribute very little to fertility explanation, except for the variable of savings. Analysis of expected family size produced similar results. Husband's relative income (although not significant) has negative influence on expected family size and positive influence on current family size.

The multivariate analysis of economic factors indicated high correlations of husband's education, husband's income, and family income with other variables. Therefore, they are eliminated from further analysis. Among the remaining variables, six interactions are found to be significant; all these involve standard of living as a common factor. As a result, the analysis is done separately within the levels of

living standard: 'better', 'same', and 'worse'.

The results suggest that wife's education and wife's income have significant inverse relationship with fertility among the respondents who feel their standard of living is 'better' or 'same' in comparison to others in similar age groups. These two variables make no significant contribution for the third level of standard of living (i.e. those who feel their living standard is 'worse'). On the other hand, wife's work interruption demonstrates a significant inverse relationship with fertility in all three levels. In other words, wives with a greater commitment to work have fewer children than their counterparts. Husband's relative income has significant influence on fertility for the last two categories of standard of living. The effect of husband's relative income on fertility is mixed. Among the respondents who feel their standard of living is 'same', relative income has a positive effect; but for those who feel their standard of living is 'worse', it has a negative effect. Husband's occupational status exhibits clear negative influence on fertility; farmers and blue collar workers have more children than white collar workers. Among the subjective measures, only the variable of savings has significant influence in all three levels. Interestingly enough, the respondents who feel their standard of living is 'worse' and save money on a regular basis have more children. Although this finding is contradictory to the general expectation, it may be due to the possibility that these couples have

reached a poor opinion of their standard of living by having more children, which in turn has forced them to save money on a regular basis. It is clear from multivariate analysis that economic factors better explain variation in fertility among those viewing their living standard as 'worse' than others'.

Economic factors, in general, appear to be relatively more important than the structural factors analysed in chapter 4. The traditional variables, such as education, income, and occupation, are found to have the expected influence on fertility, while for the subjective measures the evidence is less than conclusive. Moreover, variables dealing with wife's characteristics have a greater impact on fertility than others. Husband's relative income, which has been used successfully in many studies to explain variation in family size, seems to be less important in the present study. Yet there is some support for the positive relationship between relative income and fertility, even if the pattern is not readily apparent. Evidently, at higher levels of savings and financial planning couples tend to have more children, particularly if they feel their standard of living is 'worse' than others'. Overall, the economic variables selected for the analysis, both subjective and objective, are important in delineating the fertility behaviour of those who are not content with their current living standard.

Chapter 6 focuses on the role of sociopsychological and biological factors in fertility analysis. The latter have received little attention unless they enter into theoretical models as conditioning or explanatory variables, whereas the role of sociopsychological factors has often been criticised and underestimated in fertility analysis. However, these dimensions are considered important in the present context, since they are assumed to mediate the effects of basic determinants (i.e. socioeconomic variables) on fertility. From the literature review, the role of biological or proximate determinants (e.g contraceptive use, birth interval etc.) is clearly understood, but less so in the case of sociopsychological variables. For example, variables such as gender role egalitarianism and value of children produce mixed results. Although most of the studies suggest that egalitarian households would have smaller family size, some studies report otherwise. Similarly, the value of children is related to fertility, but its effect is not in the expected direction. In other words, not all values (benefits) relate to fertility positively; nor do all disvalues (costs) relate to it negatively. Despite such shortcomings, these two components are essential in couples' fertility decision-making and are therefore included in the present analysis.

First, the sociopsychological variables are analysed separately, then they are combined with biological variables to examine the independent effect of the latter. The

sociopsychological dimension is assessed by two concepts: gender role egalitarianism and value of children. The former is measured by the couples' actual sharing of housework and childcare. Approximately six different questions are used for this purpose: for example, 'who does the cooking, housework etc... 1) always you... 2) mostly you... 3) equally... 4) mainly partner.' Similarly, the value of children is measured by the respondents' subjective views of the rewards and costs associated with having children. More specifically, respondents were asked if they strongly agree, agree, disagree, or strongly disagree with such statements as 'having a child provides goals or happiness in life etc.' to assess the benefits and such statements as 'having children distances the spouses 'or' becoming parents means heavy responsibility' to assess the costs of having children. The effects of all the variables are also adjusted by duration of marriage.

The results from bivariate analysis reveal that couples in joint role relationships have fewer children than those in segregated role relationships. However, there are some indications that couples may decide to have smaller family size if activities such as cooking and housework are done mainly by the husband or partner. Conversely, couples may have more children in households where the husband/partner alone is involved in supervision of children's school work and financial decision making. These differentials in fertility behaviour can, to some extent, be attributed to

the attitudes of the husband or partner toward participating in certain household activities. In the present context, it appears that men are less likely to enjoy cooking and housework than supervising children's school work and making financial decisions. With regard to value of children, the subjective benefits of children are linearly related to fertility, while the results are mixed for the subjective costs of children. Apparently, women married for a longer period of time incur higher costs than benefits in having children. The analysis of expected family size produced similar results.

In multivariate analysis, gender role egalitarianism is examined in greater detail in order to answer the following questions: Does the couple's participation in various activities differ by the relative occupational status of the wife? Does the one who contributes less by employment contribute more at home? If there are differentials in participation at home, how are they reflected in the couple's fertility behaviour?

The analysis indicates that equal participation tends to increase with the wife's relative occupational status; but the real increment seems to occur between low and medium categories. Surprisingly, the wife's participation in traditional activities does not seem to decline even when her occupational status is higher than her husband's; in some cases her participation tends to increase considerably. With regard to fertility, when the adjustments are made for

other variables a substantial reduction in mean number of children is observed in the 'mostly partner' categories of the variables 'sharcook' and 'houswork'. On the contrary, couples who share housework equally have more children. The effects for the remaining variables suggest that couples in joint role relationships have fewer children than their counterparts.

The analysis provides some answers for the question of whether the one who contributes less by employment will contribute more at home. In households where either the husband or wife only works, it is evident that the one who works contributes relatively less at home. When we compare another situation, where both spouses either work or don't work, the difference in participation between the husband and wife is magnified, particularly in activities such as cooking, housework and child care. Most of these activities are done mainly by women. In terms of fertility, the findings are similar to those reported for wife's relative occupational status, but there are exceptions. For example, egalitarianism tends to increase family size if activities such as cooking, housework, and supervision of children's school work are equally shared, particularly if neither spouse is not in the labor force. Also, in some cases segregated role relationships result in smaller family size, especially if either one of the spouses works outside the home.

Examination of the effects of value of children on fertility by current labor force status reveals that most of the variables have significant influence on current family size among those respondents in the labor force. No systematic pattern emerges for the variables dealing with the subjective cost of children. Paradoxically, respondents who agree or disagree with the statement that having children means heavy responsibility all have fewer children. Similar results are also obtained for the question of whether having children distances spouses. On the other hand, variables dealing with the subjective benefit of children show the expected positive relationship with fertility. A greater percentage of respondents agree that having a child provides goals, affection, and happiness in life. This is particularly true of women not in the labor force. Such an attitude may be the result of the lower opportunity cost faced by these women. Consequently, they may have a higher mean number of children than their counterparts who disagree that such benefits result from having children. In general, the variables used under the value of children explain only a small portion of the variance in fertility.

In general, the results of sociopsychological variables suggest that gender role egalitarianism is relatively more important than the value of children in explaining variation in fertility. With few exceptions, couples in joint role relationships have fewer children than couples in segregated

role relationships. This supports the findings of previous studies (eg. Scanzoni, 1976; Bagozzi and Van Loo, 1980). Also, among the variables used in value of children, the subjective benefit of children produces the expected relationship with fertility. Respondents who associate greater benefits with having children are likely to have more children. This appears to be true particularly among the respondents not in the labor force. The variables measuring the subjective cost of children turned out to be poor predictors of fertility. In other words, very little variation is demonstrated by these indicators; in most cases respondents associated lower psychic cost with having children. This may not be surprising in a developed society like Canada's, where women make a conscious effort to control their fertility and, more importantly, are able to achieve their desired family size through hedonic calculus.

As mentioned earlier, chapter 6 also examines the link between biological factors and fertility by holding the sociopsychological factors constant. The biological factors considered for the analysis include contraceptive use in planning pregnancies (FPLAN), first birth interval, and duration of marriage. The sociopsychological variables are used here in the form of composite indices.

The correlational analysis suggests that gender role egalitarianism is much more strongly related to biological variables than the value of children. As egalitarianism increases couples use contraceptives in planning pregnancies

and postpone their first birth. Also, respondents married for a longer period of time maintain lower egalitarianism and are of the opinion that having children incurs more cost than benefit. The analysis clearly indicates that fertility is inversely related to planning of pregnancies and birth interval, and positively related to marriage duration.

The preliminary analysis of biological variables suggested the presence of significant interaction between birth interval and marriage duration. Hence, the multivariate analysis for the remaining variables of the model is done separately within the levels of duration of marriage. The biological variables have significant influence on fertility in all categories of marital duration, whereas the sociopsychological variables appear to be significant only among recently married women. But, more importantly, these variables show the expected inverse relationship with fertility, particularly for the value of children. This implies, then, that perhaps the composite indices used here are able to capture better than before the respondents' assessments of subjective costs and benefits. Among the biological variables, birth interval has the expected inverse relationship with fertility. For the variable FPLAN, the relationship is not expected. In other words, those who did not use contraceptives in planning any of their pregnancies have fewer children; evidently, these children were not desired by the respondent at that time. Closer examination reveals that most of these repondents are

currently using contraceptives and that some of them are trying to become pregnant. In general, the biological variables explain a significant portion of variance in fertility in all the categories of marital duration.

The final section (chapter 7) of the thesis attempts to develop a causal model based on the information obtained from previous chapters to study the determinants of fertility. The causal model to be tested is a variant of Bagozzi and Van Loo's theoretical model. The present model hypothesizes that fertility is a direct function of biological variables and an indirect function of sociopsychological and socioeconomic variables. The causal model is tested by means of the LISREL computer program.

The results for the endogenous variables suggest that the effects of social psychological variables on fertility are mixed, while those of biological variables are as predicted. For example, gender role egalitarianism--operationlized by sharing of household chores--influences directly to reduce the use of contraceptives in fertility planning (FPLAN) and the rate of childbearing (birth interval). Although the indirect effects are just the opposite, the final outcome is increased current family size. This further supports the point made earlier that under certain circumstances egalitarianism may serve to increase fertility. Conversely, gender role egalitarianism--operationalized by sharing of activities related to children--influences the couples to have smaller

family size by postponing their first birth and planning their pregnancies with the use of contraceptives. Apparently such a behaviour is not reflected in their attitude towards children. In other words, as egalitarianism increases, the subjective cost, as well as the benefit, associated with having children decreases. In addition, the effects of value of children on biological variables and fertility are not consistent. However, the model supports the hypothesis that social psychological variables influence fertility only through biological variables.

With regard to exogenous variables, all except wife's education have significant direct influence on fertility. The effects of these variables are in the hypothesized directions. However, the paths they take in influencing fertility are different. For example, wife's education influences fertility indirectly through gender role egalitarianism (dealing with household chores), subjective benefit of children and rate of childbearing; the husband's economic status through social psychological processes in general; the degree of commitment (measured by work interruptions) through gender role egalitarianism and subjective benefit of children; the residential status of the respondent in youth mainly through subjective benefit of children; and the duration of marriage through all the endogenous variables, except for the subjective cost of children. However, the model does not support the hypothesis that socioeconomic determinants influence fertility

indirectly through other variables except for wife's education.

In general, with few exceptions, the causal links between the variables are in the expected direction. Although the causal model explains 80% of the variation in fertility, it does not support the general hypothesis. The socioeconomic determinants have direct rather than indirect influence on fertility. This can be attributed to the inability of sociopsychological variables to transmit these effects. The sociopsychological components used in the model involve substantial measurement and structural errors. Moreover, the causal connections among the sociopsychological concepts are mixed. But the indirect effects of these variables on fertility provide partial support for the general hypothesis.

This section has also examined fertility differentials by ethnicity, religion, and region. In addition to variables used in the causal model, a few extra variables are included because of their importance in studying fertility differentials. Regression decomposition analysis is used to study the fertility differentials.

The results from the decomposition analysis for ethnicity suggest the following. Socioeconomic, sociopsychological, and biological variables contribute very little to an understanding of fertility differentials among the British, the French and 'other' ethnic groups. Moreover, ethnicity has different consequences for women married

recently than for those married for a longer period of time. Surprisingly, among the recently married women, ethnicity *per se* not only increases fertility, but interacts with other variables to maintain higher levels of reproduction than those shown for the British. Among the respondents married for 14+ years the interaction tends to minimize in family size. But the examination of the effects of individual variables suggests the presence of offsetting effects. Overall, a substantial portion of variance remains unexplained by the model, particularly for those married for a longer period of time. Similar conclusions are also reached from the decomposition analysis of religion.

With regard to region, the decomposition analysis suggests that there would be a sizeable reduction in fertility if Atlantic women were to develop characteristics similar to women elsewhere in Canada. Further, region *per se* serves to raise fertility, but more so for women married for 14+ years. It also interacts with other variables to increase the fertility of the latter and to decrease fertility of recently married women.

The general conclusion that may be drawn from this thesis is that biological or proximate factors are most important in explaining variation in fertility, followed by socioeconomic factors, structural factors, and sociopsychological factors, in that order. The notion that socioeconomic factors influence fertility indirectly through the sociopsychological process gains little or no support

from the analysis. Moreover, objective rather than subjective economic dimensions appear to be more important in fertility analysis. Fertility differentials by structural factors do exist; but they are relatively smaller than in previous studies. Sociopsychological factors emerge as the least important component in fertility explanation. Furthermore, these factors exhibit no systematic relationship with fertility; in some cases, the results are confusing. However, gender role egalitarianism remains a better predictor of fertility than the value of children.

8.2 Broader Relevance of the Thesis

This study has provided a detailed examination of fertility determinants and modelled them in order to offer a better understanding of the decision-making process among women in Canada. It has also made an important contribution to Canadian fertility research by incorporating more essential components of fertility and using a sounder methodology than have so far been demonstrated by any Canadian studies. Many of the areas investigated in this thesis were suggested by demographers during a special workshop held by Statistics Canada in 1981. Therefore, these findings will provide valuable information for future fertility research in Canada.

Structural factors, viewed by many as inadequate for fertility explanation, continue to be important in certain situations. Particularly when religion is combined with

ethnicity, fertility differentials among certain groups are proliferated. Although these differentials are smaller, in a multicultural society like Canada's analysis of structural factors will enable us to comprehend how intermediate variables operate under a given normative structure. In fact, the study suggests the existence and persistence of group differentials in fertility due to differences in operation of these intermediate variables.

The sociopsychological component, which has received little attention in fertility studies, continues to exhibit poor relationship with fertility. But there is evidence suggesting that this component needs to be taken seriously in fertility decision-making models. For example, gender role egalitarianism emerges as the most significant variable among sociopsychological facors in explaining variation in fertility. In contrast to opinions held by previous researchers, the findings suggest that it is not egalitarianism *per se* but rather the context of egalitarianism that seems to be more relevant in fertility decision-making processes. On the other hand, the value of children, used in many studies (eg. Arnold et al., 1975), offers no conclusive evidence of its relationship with fertility. This lack of evidence can be attributed to errors involved in measuring a given concept rather than to the process itself.

Economic factors emerge as by far the most important of all the variables (except biological) in fertility

decision-making considered for the analysis. More importantly, objective economic measures contribute a great deal more to an explanation of variation in fertility than subjective measures, even though the latter are often suggested as more appropriate to an assessment of economic well-being. When controlled for other variables used in the model, economic determinants tend to have direct influence on fertility. This finding, in a way, does not support the hypothesis that socioeconomic factors influence fertility through other variables. But this by no means indicates that economic factors are far superior to others in fertility decision-making; rather, it suggests that intermediate variables transmitting the effects of socioeconomic factors to fertility are simply poor.

8.3 Suggestions for Future Research

Although the variables used in the analysis are able to explain a significant portion of variation in fertility, some of the relationships between variables are not clear or straightforward. Our understanding of fertility phenomena, however, could be further improved if certain areas of the investigation were refined.

For example, the indicators used to measure the sociopsychological component suffer from measurement errors. In addition, very little variation is observed among these indicators, particularly for the value of children. The role of these factors in fertility decision-making may be

substantial in the near future because of an upsurge in marital dissolutions, single parenthood, and the dual role of women. Therefore, future research should use more carefully selected and more refined measures to capture the sociopsychological dimension. This is also true to some extent for the subjective measures used to assess the economic well-being of couples.

The model used in this thesis is assumed to be recursive, but this may not be valid in some cases. For example, gender role egalitarianism and taste or attitude toward children are also likely to be a function of fertility. One could unveil interesting relationships among these variables if one performed analyses according to the parity of women.

Finally, the fertility decision-making process cannot be fully understood without incorporating husband-wife interactions, more specifically responses from both spouses. Studies indicate that women's reports about their partners do not agree with reports from the men themselves. Furthermore, the discrepancies between men's and women's reports of the same event are overwhelming. Therefore, information required for fertility analysis needs to be collected from both the husband and wife separately. Or, at the very least, information from husbands should be based on subsamples. Essentially, this information would allow us to study in greater detail the husband-wife interaction in fertility decision-making.

BIBLIOGRAPHY

Andrews, Frank., James N. Morgan., John A. Sonquist and Laura Klem
1973 Multiple Classification Analysis: A Report on a Computer Program for Multiple Regression Using Categorical Predictors. Survey Research Centre, University of Michigan, Ann Arbor, Michigan. 104 p.

Arnold, F., R.A. Bulatao., C. Buripakadi., B.J. Chung., J.T. Fawcett., T. Iritani., S.J. Lee., and T.-S. Wu
1975 The Value of Children: Introduction and Comparative Analysis, Vol. I. Honolulu: East-West Population Institute.

Back, K.W., and P.H. Hass
1973 Family structure and fertility control. In J.T. Fawcett (ed.), Psychological Perspectives on Population. New York: Basic Books.

Bagozzi, Richard P. and M.F. Van Loo
1978a Fertility as consumption:theories from the behavioral sciences. Journal of Consumer Research, 4:199-228.

Bagozzi, Richard P. and M.F. Van Loo
1978b Toward a general theory of fertility: a causal modelling approach. Demography, 15:301-320.

Bagozzi, Richard P. and M.F. Van Loo
1980 Decision-making and fertility: a theory of exchange in the family, pp. 91-124. In T.K. Burch(ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-Making. Westview Press, Inc. 242 p.

Bahr, Stephen J., Bruce A. Chadwick and Joseph H. Stauss
1975 The effect of relative economic status on fertility. Journal of Marriage and the Family 37(May):335-343.

Balakrishnan, T.R., G.E. Ebanks and C.F. Grindstaff
1979 Patterns of Fertility in Canada, 1971. Ottawa: Statistics Canada, Catalogue No. 99-759E; 1971 Census Monograph.

Balakrishnan, T.R., J.F. Kanter and J.D. Allingham
1975 Fertility and Family Planning in a Canadian Metropolis. Montreal: McGill-Queen's University Press.

Balakrishnan, T.R., Karol J. Krotki., and E. Lapierre-Adamcyk
1985 Contraceptive use in Canada, 1984. Family Planning Perspectives, 17, 209.

Bartlett, Peggy F.
1980 The anthropological approach to fertility decision-making, pp. 163-183. In T.K. Burch(ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-Making. Boulder, Colo.: Westview Press.

Bean, F.D and C.H. Wood
1974 Ethnic variations in the relationship between income and fertility. Demography, 11:629-640.

Beaujot, R
1975 Ethnic Variations in Fertility in Edmonton. Unpublished Ph.D thesis, University of Alberta.

Beaujot, R.
1978 Canada's Population: Growth and Dualism. Population Bulletin, Vol. 32, 2. Population Reference Bureau, Inc.

Beaujot, R., Karol J. Krotki and P. Krishnan
1978 Socio-cultural variations in the applicability of the economic model of fertility. Population Studies, 32(1):319-325.

Beaujot, R., Karol J. Krotki and P. Krishnan
1982 Analysis of ethnic fertility differentials through the consideration of assimilation. International Journal of Comparative Sociology, 23(1):52-59.

Becker, G.S.
1960 An economic analysis of fertility, pp 209-231. In Demographic and Economic Change in Developed Countries. National Bureau of Committee for Economic Research. Princeton: Princeton University Press.

Becker, G.S.
1965 A theory of allocation of time. Economic Journal, Vol. 75, no. 229 pp 493-517.

Becker, G.S.
1981 A Treatise on the Family. Cambridge, Mass: Harvard University Press.

Beckman, L.J.
1978 Couples' decision-making processes regarding fertility, pp. 57-81. In K.E. Taeuber, L.

Bumpass, and J.A. Sweet (eds.), Social Demography. New York: Academic Press.

Beckman, L. J.
1980 The relative influence of husband versus wife in fertility decision-making. Paper presented at the Eigth Annual Workshop on Psychological Factors in Population Research, April 8-9, Denver, Colorado.

Beckman, L.J.
1981 The relationship between sex roles, fertility, and family size preferences. Psychological Abstracts, 65:18-49.

Beckman, L.J.
1982 Measuring the process of fertility decision-making, pp. 73-95. In Greer L. Fox (ed.), The Childbearing Decision: Fertility Attitudes and Behavior. Sage Publications, Inc.

Ben-Porath, Yoram
1973 Economic analysis of fertility in Israel: point and counterpoint. Journal of Political Economy Supplement: S202-S233.

Bergmann, Barbara R.
1986 The Economic Emergence of Women. New York: Basic Books, Inc. 372 p.

Bernhardt, E.M.
1972 Fertility and economic status: Some recent findings on differentials in Sweden. Population Studies, 26(2): 175-84.

Blake, Judith
1966 Ideal family size among white Americans: a quarter of a century's evidence. Demography, 3:154-173.

Blake, Judith
1967 Income and reproductive motivation. Population Studies 21(3):185-206.

Blake, Judith
1968 Are babies consumer durables? A critique of the economic theory of reproductive motivation. Population Studies, 22(1):5-41.

Blake, Judith
1974 Can we believe recent data on birth expectations in the United States? Demography, 11(1):25-44.

Blake, J. and Jorge Del Pinal
1982 Educational attainment and reproductive preferences: theory and evidence. In Charlotte, Hohn and R. Mackensen(ed.), Determinants of Fertility Trends: Theories Re-examined. IUSSP.

Blau, P.M. and O.D. Duncan
1967 The American Occupational Structures. New York:Wiley. 520 p.

Bongaarts, J.
1978 A framework for analyzing the proximate determinants of fertility. Population and Development Review, 4(1):105-132.

Bongaarts, J.
1982 The fertility-inhibiting effects of the intermediate fertility variables. Studies in Family Planning, Vol. 13(67):179-89.

Bulatao, R.A.
1981 Values and disvalues of children in sequential childbearing decisions. Demography, 18:1-26.

Bulatao, R.A. and James T. Fawcett
1983 Influences on childbearing Intentions Across the Fertility Career: Demographic and Socioeconomic Factors and the Value of Children. Papers of the East-West Population Institute. No.60-F.

Bulatao, R.A and D. Lee with P.E. Hollerbach and J. Bongaarts (eds.)
1983 Determinants of Fertility in Developing Countries. New York: Academic Press.

Bumpass, Larry and Charles E. Westoff
1970 The Later Years of Childbearing. Princeton: Princeton University Press.

Burch, T.K.
1966 The fertility of North American Catholics: A comparative overview. Demography 3:174-186.

Cain, G.G. and A. Weininger
1973 Economic deteminants of fertility:results from cross-sectional analysis of aggregate data. Demography 10:205-223.

Caldwell, John C.
1976 Toward a restatement of demographic transition theory. Population and Development Review, 2(3):321-66.

Caldwell, John C.

1978 A theory of fertility:from high plateau to destabilization. Population and Development Review, 4(4):553-578.

Canada, Statistics Canada
1988 Canada Yearbook. Ottawa: Minister of Supply and Services Canada.

Canada, Statistics Canada
1978 Vital Statistics 1977-78, Vol. 1, Ottawa.

Canada, Statistics Canada
1982 1981 Census of Canada. Cat. Nos. 90-901, 92-911, 92-912, 92-913.

Canada, Statistics Canada
1986 Vital Statistics, Births and Deaths. Cat. 84-204, Annual.

Carisse, Colette
1964 Plantification des Naissances en Milieu Canadian-Francais. Montreal:Presses de L'Universite de Montreal.

Charles, Enid
1948 The changing size of the Family in Canada. Census Monograph No.1. Ottawa:Queen's Printer.

Chaudhury, Rafiqul Huda
1977 Relative income and fertility. Demography, 14(2):179-195.

Clifford, William B. and Patricia L. Tobin
1977 Labor force participation of working mothers and family formation: some further evidence. Demography, 14(3):273-284.

Cochrane, S.H.
1979 Fertility and Education: What do We Really Know? Baltimore, Md: The John Hopkins University Press.

Coleman, J.S., Z.D. Blum., A.B. Sovensen., and P.H. Rossi
1972 White and black careers during the first decade of labor force experience. Part I: occupational status. Social Science Research, 1:243-270.

Collishaw, N.P.
1976 Fertility in Canada. Ottawa: Statistics Canada.

Crimmins-Gardner, Eileen and Phyllis A. Ewer
1982 Relative and potential income and fertility. Canadian Studies in Population Vol 9:95-108.

Davis, Kingsly

1950 Human Society. New York: Macmillan.

Davis, K
1959 The sociology of demographic behavior, pp. 309-333. In Robert, Merton (ed.), Society Today: Problems and Prospects. New York: Basic Books.

Davis, K
1984 Wives and work: consequences of the sex role revolution. Population and Development Review vol. 10(3):397-417.

Davis K and Judith Blake
956 Social structure and fertility: an analytic framework. Economic Development and Cultural Change, 4(3):211-235.

Duesenberry, J.S.
1960 Comment, pp. 231-34. In National Bureau of Economic Research, Demographic and Economic Change in Developed Countries. Princeton: Princeton University Press, 536p.

Duncan, O.D.
1964 Residential areas and differential fertility. Eugenics Quarterly, 11:82-89.

Duncan, O.D.
1965 Farm background and differential fertility. Demography, 2:240-249.

Easterlin, R.A.
1966 On the relation of economic factors to recent and projected fertility changes. Demography, 3:131-153.

Easterlin, R.A.
1969 Toward a socioeconomic theory of fertility: a survey of recent research on economic factors in American fertility, pp. 127-156. In Samuel J. Behrman., L. Corsa, Jr., and R. Freedman (eds.), Fertility and Family Planning: A World View. Ann Arbor: The University of Michigan Press.

Easterlin, R.A.
1973 Relative economic status and the American fertility swing. In Sheldon Eleanor Bernert(ed.), Family Economic Behaviour: Problems and Prospects. Philadelphia: J.B. Lippincott, Co.

Easterlin, R.A.
1975 An economic framework for fertility analysis. Studies in Family Planning, 6:54-63.

Easterlin, R.A.
1978 The economics and sociology of fertility: a synthesis. In Charles Tilley (ed), Historical Studies of Changing Fertility. Princeton University Press.

Elahi, Virginia K.
1973 A family planning survey in Halifax, Nova Scotia. Canadian Journal of Public Health, 64(4):515-520.

ESCAP
1974 Husband-Wife Communication and Practice of Family Planning. Bangkok, Asian Population Studies Series, No.16. New York: United Nations.

Espenshade, T.
1972 The price of children and socioeconomic theories of fertility. Population Studies, 26(2):207-221.

Fawcett, J.T.(ed.)
1972 The Satisfactions and Costs of Children: Theories, Concepts and Methods. Honolulu: East-West Population Institute.

Fawcett, J.T., S. Albores and F. Arnold
1972 The value of children among ethnic groups in Hawaii: exploratory measurements, pp. 234-257. In J.T. Fawcett(ed.), The Satisfactions and Costs of Children: Theories, Concepts, and Methods. Honolulu:East-West Population Institute.

Farooq, Ghazi and George B. Simmons (ed.)
1985 Fertility in Developing Countries: An Economic Perspective on Research and Policy Issues. The Macmillan Press Ltd, Hong Kong.

Fishbein, M.
1972 Towards an understanding of family planning behavior. Journal of Applied Social Psychology, 2:214-227.

Freedman, Deborah S.
1963 The relation of economic status to fertility. The American Economic Review 53(June):414-426.

Freedman, Deborah S. with Eva Mueller
1974 Economic Data for Fertility Analysis: World Fertility Survey, Occasional Papers, No. 11. International Statistical Institute, The Netherlandss.

Freedman, Deborah S. and Arland Thornton
1982 Income and fertility: the elusive relationship. Demography 19(1):65-78.

Freedman, R.
1961-62 The Sociology of human fertility: a trend report and bibliography. Current Sociology, 10-11(2):35-121.

Freedman, R.
1962 The American studies of family planning and fertility: a review of major trends and issues, pp 211-27. In C.V. Kiser (ed.), Research in Family Planning. Princeton: Princeton University Press. 664 p.

Freedman, R.
1975 The Sociology of Human Fertility: An Annotated Bibliography. New York: Irbington Publishers 3-21.

Freedman, R and Lolangene C. Coombs
1966 Childspacing and family economic position. American Sociological Review 31:631-648.

Freedman, R. and D.P. Slesinger
1961 Fertility differentials for the indigenous non-farm populations of the United States. Population Studies 15:161-173.

Freedman, R., Pascal K. Whelpton and Arthur A. Campbell
1959 Family Planning Sterility and Population Growth. New York: McGraw-Hill.

Friedman, M.
1957 A Theory of Consumption Function. Princeton: Princeton University Press.

George, M.V. and A. Romanuik
1971 Patterns and factors of fertility decline in Canada 1960's. Paper presented at the sixth annual meeting of the Canadian Sociology and Anthropology Association. Memorial University, St. John's.

Goldberg, David
1958 Family Role Structure and Fertility. Ann Arbor: University Microfilms.

Goldberg, D.
1960a Some Recent Developments in Fertility Research. Princeton: Princeton University Press.

Goldberg, D.
1960b Another look at the Indianapolis fertility data. Milbank Memorial Fund Quarterly, 38:23-36.

Goldberg, D.

1975 Socioeconomic theory and differential fertility: the case of the LDC's. Social Forces 54(1):84-106.

Goldberg, D., Harry Sharp and R. Freedman
1959 The stability and reliability of expected family size data. Milbank Memorial Fund Quarterly 37(4):369-385.

Goldscheider, C.
1971 Religion, minority group status and fertility, pp. 270-298. In C. Goldscheider, Population, Modernization and Social Structure. Boston:Little, Brown. 345 p.

Goldscheider, C., and P.R. Uhlenberg
1969 Minority group status and fertility. American Journal of Sociology 74:361-372.

Grindstaff, Carl F.
1975 The baby bust: changes in fertility patterns in Canada. Canadian Studies in Population, 2:15-22.

Grindstaff, Carl F.
1981 Population and Society: a Sociological Perspective. West Hanover, Mass: Christopher Publishing House. 161 p.

Halli, S.S.
1987 How Minority Status Affects Fertility: Asian Groups in Canada. Connecticut:Greenwood Press, Inc. 196 p.

Hass, P.H.
1972 Maternal role incompatibility and fertilty in Latin America. Journal of Social Issues 28(2):111-28.

Hass, P.H.
1974 Wanted and unwanted pregnancies: a fertility decision-making model. Journal of Social Issues 30:125-165.

Hawthorn, G.
1970 The Sociology of Fertility. London: Collier-MacMillan, Ltd.

Heer, D.M.
1962 Husband and wife perceptions of family power structures. Marriage and Family Living, 24:65-67.

Henripin, Jacques
1968 Trends and Factors of Fertility in Canada. Census

Monograph, 1961 Census of Canada. Ottawa. Dominion Bureau of Statistics, 425p.

Henripin, Jacques
1972 A fertility survey in Quebec. Unpublished paper presented at Population Association of America meetings.

Henripin, Jacques and Evelyn Lapierre-Adamcyk
1974 La Fin de la Revanche des Berceaux:Qu'en Pensent les Quebecoises. Montreal: Les Preses de l' Universite' de Montreal.

Henripin, Jacques and Jacques Legare
1971 Recent trends in Canadian fertility. Canadian Review of Sociology and Anthropology 8(2):106-113.

Hobart, C.
1981 Sources of egalitarianism in young unmarried Canadians. Canadian Journal of Sociology 6(3):261-82.

Hoffman, Lois W.
1973 A psychological perspective on the value of children to parents: concepts and measures. In J. Fawcett(ed.), Psychological Perspective on Population. New York: The Population Council.

Hoffman, L.W. and M.L. Hoffman
1973 The value of children to parents, pp. 19-76. In J.T. Fawcett (ed.), Psychological Perspectives on Population. New York: Basic Books.

Hoffman, L.W. and Frederick Wyatt
1960 Social change and motivations for having larger families: some theoritical considerations. MerrillPalmer Quarterly, 6:235-54.

Holter, H.
1970 Sex Roles and Social Structure. Oslo: Universitet-Forlaget.

Hull, T.H.
1983 Cultural influences on fertility decision styles, pp. 381-414. In R.A. Bulatao., R.D. Lee with P.E. Hollerbach and J. Bongaarts(eds.), Determinants of Fertility in Developing Countries. Vol. 2. New York: Academic Press.

Jackson, J.
1972 Role. London: Cambridge University Press.

Janowitz, B.

1976 An analysis of impact of education on family size. Demography, 13:189-198.

Jiobu, R. and H. Marshall
1977 Minority status and family size: a comparison of explanations. Population Studies, 31:509-517.

Johnson, N.E. and Ryoko Nishida
1980 Minority group status and fertility: a study of Japanese and Chinese in Hawaii and California. American Journal of Sociology, 86(3):496-511.

Johnson, N.E., C. Stokes., and R.H. Warland
1978 Farm-non-farm differentials in fertility: the effects of compositional and sex-role factors. Rural Sociology 43:671-90.

Jones, E. and C. Westoff
1979 The end of Catholic fertility. Demography 16:209-217.

Joreskog, K.G.
1973 A general method for estimating a linear structural equation system. In A.S. Goldberger and O.D. Duncan(eds.) Structural Equation Models in the Social Sciences. New York: Seminar Press.

Joreskog, K.G.
1977 Structural equation models in the social sciences: specification, estimation, and testing, pp. 265-287. In P.R. Krishniah (ed.), Applications of Statistics. Amsterdam: North-Holland Publishing Co.

Joreskog, K.G.
1978 Structural analysis of covariance and correlation matrices. Psychometrika 43:443-477.

Joreskog, K.G. and Dag Sorbom
1986 LISREL: Analysis of Relationships by the Method of Maximum Likelihood. Users Guide, Version VI. University of Uppsala, Sweden.

Kalbach, W.E. and W.W. McVey
1979 The Demographic Bases of Canadian Society (2nd ed.). Toronto,Ontario: McGraw-Hill Ryerson.

Kayani, A. and P. Krishnan
1973 Fertility decline in Canada 1961-1970: an analysis through the life table approach, pp.302-306. In proceedings of the Social Statistics section American Statistical Association.

Kenkel, W.F
1957 Influence differentian in family decision-making. Sociology and Social Research 42:18-25.

Kiser, C.V. and P.K. Whelpton
1953 Resume of the Indianapolis study of social and psychological factors affecting fertility. Population Studies, 7(2):95-110.

Kiser, C.V. and P.K. Whelpton
1958 Summary of the chief findings and implications for future studies, pp. 1325-72. In P.K Whelpton and C.V. Kiser (eds.), Social and Psychological Factors Affecting Fertility, Vol. 5. New York: Milbank Memorial Fund.

Krishnan, P. and Karol J. Krotki
1976 Growth of Alberta Families Studies (GAFS): A Report to Health and Welfare Canada on Questionnaires Collected from 1,045 women of Edmonton in the Winter of 1973-74. Edmonton, Alberta: Population Research Laboratory.

Krotki, Karol J. and Evelyne Lapierre
1970 Translation of the article."La fecondite au Canada, selon la religion, l'origine ethnique, et l'etat matrimonial". Population 23(5):815-834, September-October, 1968.

Kunz, Phillip R.
1966 The relation of income and fertility. Journal of Marriage and the Family, Nov:509-513.

Kupinsky, Stanley (ed.)
1977 The Fertility of Working Women: A Synthesis of International Research, New York: Praeger Publishers.

Lancaster, K.J.
1965 A new approach to consumer theory. Journal of Political Economy, 74(2):132-57.

Lapierre-Adamcyk, E.
1979 Socioeconomic Correlates of Fertility in Canadian Metropolitan Areas, 1961 and 1971. Census of Canada. Ottawa: Statistics Canada. 101 p.

Legare, J.
1974 Demographic highlights of fertility decline in Canadian marriage cohorts. Canadian Reviews of Sociology and Anthropology 11:287-307.

Leibenstein, H.
1957 Economic Backwardness and Economic Growth. John

Wiley and Sons, New York. 295 p.

Leibenstein, H.
1974 An interpretation of the economic theory of fertilty: promising path or blind alley? Journal of Economic Literature 12:457-479.

Leibenstein, H.
1975 The economic theory of fertility decline. The Quarterly Journal of Economics, Vol.89(Feb):1-31.

Leibenstein, H.
1981 Economic decision theory and human fertility behavior. Population and Development Review, 7:381-400.

Leridon, H.
1982 Overview, pp. 297-365. In Charlotte Hohn and R. Mackenson(ed.), Determinants of Fertility Trends: Theories Re-examined. IUSSP.

Long, Larry H.
1970 Fertility patterns among religious groups in Canada. Demography 7(2):135-149.

Lopez, D. and G. Sabah
1978 Untanling structural and normative aspects of the minority status-fertility hypotheses. American Journal of Sociology 83:1491-1497.

Lorimer, F.
1954 Culture and Human Fertility. Zurich:UNESCO, Paris. 510 p.

MacDonald, Maurice M. and Ronald R. Rindfuss
1978 Relative economic status and fertility:evidence from a cross-section, pp. 291-307. In Julian L. Simon (ed.), Research in Population Economics, Vol. 1. Connecticut: Jai Press, Inc.

Mathews, R.
1976 There's No Better Place Than Here: Social Change in Newfoundland Communities. Toronto: Peter Martin Associates.

Mauldin, W.P.
1965 Fertility studies:knowledge, attitudes, and practices. Studies in Family Planning, 7:1-10.

McDaniel, Susan A.
1978 Family Size Expectations in Edmonton: A Cohort Approach. Unpublished Ph.D thesis, University of Alberta.

Mincer, Jacob
1972 Labor force participation of married women. In H. Gregg Lewis (ed.), Aspects of Labour Economics, National Bureau of Economics Research, Universities National Bureau Conference Series, no. 14. Princeton: Princeton University Press.

Mincer, J.
1963 Market prices, opportunity cost and income effects, pp.63-65. In Carl F. Christ(eds.). Measurement in Economics. Stanford, Calif: Stanford University Press.

Mosher, William D. and Gerry E. Hendershot
1984 Religion and fertility: a replication. Demography 21(2):185-191.

Nambcodiri, N.K.
1970 On the relation between economic status and family size preferences when status differentials in contraceptive instrumentalities are eliminated. Population Studies 24(2):233-239.

Namboodiri, N.K.
1972 Some observations on the economic framework for fertility analysis. Population Studies 26(2):185-206.

Namboodiri, N.K.
1980 A look at fertility model-building from different perspectives, pp.71-90. In T.K. Burch(ed.) Demographic Behavior on Decision-making. Westview Press, Inc.

Nathanson, C.A
1979 Sex, illness, and medical care. Social Science and Medicine, 11: 13-25.

Notestein, Frank
1945 Population, the long view. In T.W. Schultz(ed.), Food for the World. Chicago: University of Chicago Press.

Peterson, W.
1969 Population. New York: Macmillan. 735 p.

Pinelli, A.
1971 Female labour and fertility in relationship to contrasting social and economic conditions. Human Relations 24:603-610.

Polgar, S. and F. Rothestein
1970 Family planning and conjugal role in New York

city poverty areas. Social Science and Medicine 4:135-139.

Pool, Janet E.
1975 Female reproductive behavior Part I: Report on a study carried out in Ottawa, 1972-73. Unpublished paper. Ottawa: Department of Epidemiology and Community Medicine, University of Ottawa.

Presser, H.B.
1977 Female employment and the division of labour within the home: longitudinal perspective. Paper presented at the P.A.A. meetings, St. Louis, April 20-23.

Rainwater, Lee
1960 And the Poor Get Children. Chicago:Quadrangle.

Rainwater, Lee
1965 Family Design: Marital Sexuality, Family Size, and Contraception. Chicago: Aldine.

Ram, B.
1976 Regional-subcultural explanations of black fertility in the United States. Population Studies 30(3):553-59.

Reed, Fred W., J. Richard Udry., and Maxines Ruppert
1975 Relative income and fertility: the analysis of individuals' fertility in a biracial sample. Journal of Marriage and the Family 37(4):799-805.

Rindfuss, Ronald R., Larry Bumpass., and Craig St. John
1980 Education and fertility:implications for the roles women occupy. American Sociological Review, Vol. 45(June): 431-447.

Robinson, P.
1987 Women's Work Interruptions: Results From the 1984 Family History Survey. Statistics Canada. Catalogue No. 99-962, 36 p.

Robinson, Warren C. and Sarah F. Harbinson
1980 Toward unified theory of fertility, pp. 201-235. In T.K. Burch (ed.), Demographic Behavior: Interdisciplinary Perspectives on Decision-making. Westview Press, Inc.

Romanuik, A.
1981 Increase in natural fertility during the early stages of modernization: Canadian Indians case study. Demography, 18:152-172.

Romanuik, A.

1984 Current Demographic Analysis. Fertility in Canada: From Baby-boom to Baby-bust. Statistics Canada, 91-524.

Romanuik, A. and V. Piche
1972 Natality estimates for Canadian Indians by stable populations models. Canadian Review of Sociology and Anthropology, 9:1-20.

Ryder, Norman B.
1973 A critique of the national fertility study. Demography, Vol.10(4):495-506.

Ryder, Norman B. and C.F. Westoff
1971 Reproduction in the United States. Princeton: Princeton University Press. 419 p.

Sabol, M.G.
1974 Commitment to work. In L.W. Hoffman and F.I. Nye (ed.), Working Mothers. San Francisco.

Safilios-Rothschild, C.
1969 Family sociology or wives' family sociology? A cross cultural examination of decision-making. Journal of Marriage and the Family, 31: 290-301.

Saflios-Rothschild, C.
1971 Toward a conceptualization and measurement of work commitment. Human Relations, 24:689-93.

Saflios-Rothschild, C.
1972 The relationship between work commitment and fertility. International Journal of Society of the Family, 2:64-71.

Scanzoni, J.H.
1972 Sexual Bargaining: Power Politics in American Marriage. Englewood Cliffs, New Jersey: Printice-Hall.

Scanzoni, J.H.
1975 Sex Roles, Life Styles, and Childbearing. New York: Free Press.

Scanzoni, J.H.
1976 Gender role and the process of fertility control. Journal of Marriage and the Family, 38:677-691.

Scanzoni, J.H. and M. McMurry
1972 Continuities in the explanations of fertility control. Journal of Marriage and the Family, 34:315-22.

Scanzoni, J.H. and M. Szinovacz
1980 Family Decision-Making: A Developmental Sex Role Model. Sage Library of Social Research, no. 111.

Schultz, T.W.
1973 The value of children: an economic perspective. Journal of Political Economy, 81(2):S2-13.

Schultz, T.W.(ed.)
1974 Economics of the Family: Marriage, Children, and Human Capital. Chicago: University of Chicago Press, 584 p.

Sly, D.F.
1970 Minority group status and fertility: an extension of Goldscheider and Uhlenberg. American Journal of Sociology, 76:443-459.

Sonquist, John A.
1970 Multivariate Model Building: The Validation of a Search Strategy. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan.

Stokes, C.S. and C.J. Dudley
1972 Family planning and conjugal roles:some further evidence. Social Science Medicine, 6:157-161.

Suter, Larry E., L.J. Waite and R.M. Stolzenberg
1976 Birth expectations and working plans of young women: changes in role choices. Paper presented at the P.A.A meetings.

Thornton, Arland
1978 The relationship between fertility and income, relative income, and subjective well-being, pp. 261-290. In Julian L. Simon (ed.), Research in Population Economics, Vol 1. Connecticut: Jai Press, Inc.

Thornton, Arland
1979 Fertility and income, consumption aspirations, and child quality standards. Demography, 16:157-175.

Tobin, P.L.
1976 Conjugal role definitions, value of children, and contraceptive practice. The Sociological Quarterly, 17:314-322.

Tremblay, V. and Guy Trudel
1984 Canadian Fertility Survey: Methodological Report. Montreal: Universite de Montreal. 167 p.

Trovato, F.
1981 Canadian ethnic fertility. Sociological Focus, 14:57-74.

Trovato, F. and T.K. Burch
1980 Minority group status and fertility in Canada. Canadian Ethnic Studies 12:1-18.

Trovato, F. and C.F. Grindstaff
1980 Decomposing the urban-rural fertility differential, Canada, 1971. Rural Sociology, 45(3):448-468.

Trovato, F. and S.S. Halli
1983 Regional differences in family size: the case of the Atlantic provinces in Canada. Rural Sociology, 48(2):271-290.

Turchi, Boone A.
1975a Microeconomic theories of fertility: a critique. Social Forces 54(Sept):107-125.

Turchi, Boone A.
1975b The Demand for Children in the U.S. Ballinger Press.

Turchi, Boone A.
1979 Comments on fertility as consumption: theories from the behavirol sciences. Journal of Consumer Research, 5:293-6.

Turner, J. and A.B. Simmons
1977 Sex roles and fertility: which influences which? Canadian Studies in Population 4:43-60.

United Nations
1983 Relationship Between Fertility and Education: A Comparative Analysis of World Fertility Survey Data for Twenty-Two Developing Countries. New York.

Vance, Rupert B.
1952 Is theory for demographers? Social Forces 31(1):9-13.

Veevers, J.E.
1983 Demographic Aspects of Vital Statistics: Fertility. Ottawa: Statistics Canada, Catalogue No. 84-X-501E.

Westoff, C.F.
1962 The Family Growth in Metropolitan America study: a progress report, pp. 185-191. In C.V. Kiser.

Westoff, C.F.
1975 The yield of the imperfect:the 1970 national fertility study. Demography, 12(4):573-80.

Westoff, C.F., R.G. Potter., P.C. Sagi., and E.G. Mishler
1961 Family Growth in Metropolitan America. Princeton: Princeton University Press. 433 p.

Westoff, C.F., R.G. Potter., and P.C. Sagi
1963 The Third Child: A Study of Prediction in Fertility. Princeton: Princeton University Press. 292 p.

Westoff, L.A. and C.F. Westoff
1971 From Now to Zero-Fertility, Contraception, and Abortion in America. Little, Brown and Co., Boston, 358 p.

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

Willis, Robert J.
1973 A new approach to the economic theory of fertility behaviour. Journal of Political Economy, Vol. 81(2) Part II:14-64.

APPENDIX A

a. COMPUTATION OF FERTILITY PLANNING (FPLAN)

```
RECODE Q511,Q521,Q531,Q541,Q551,Q561,C7.1,C8.1,C9.1,C10.1,
       C11.1,C12.1 (1,2=1)(3=2)/Q515,Q525,Q535,Q545,Q555,
       Q565,C7.5,C8.5,C9.5,C10.5,C11.5,C12.5 (1=1)(2,3=2)

DO REPEAT X1 = Q511,Q521,Q531,Q541,Q551,Q561,C7.1,C8.1,C9.1,
               C10.1,C11.1,C12.1/
           X2 = Q515,Q525,Q535,Q545,Q555,Q565,C7.5,C8.5,C9.5,
               C10.5,C11.5,C12.5/
           X3 = F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12
IF (X1 EQ 1 AND X2 EQ 1) X3 = 1
IF (X1 EQ 2 AND X2 EQ 1) X3 = 1
IF (X1 EQ 1 AND X2 EQ 2) X3 = 0
IF (X1 EQ 2 AND X2 EQ 2) X3 = 0
IF (X1 EQ 9 AND Q506 EQ 1) X3 = 1
END REPEAT
COMPUTE FP = SUM(F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12)
COMPUTE FPLAN = FP/Q411
RECODE FPLAN(LO THRU .00=1)(.10 THRU .91=2)(1=3)(MISS=4)
Where,
      1 = No planning, 2 = Some planning
      3 = Perfect planning
```

b. COMPUTATION OF GENDER ROLE EGALITARIANISM(GRE)

```
RECODE SHARCOOK, HOUSWORK, CCLOTHES, CHLDCARE, SCHLWORK
       (1,2,4=0)(3=1)/DECISION(1,3,4=0)(2=1)
COMPUTE GRE = SUM(SHARCOOK,HOUSWORK,CCLOTHES,CHLDCARE,
                  SCHLWORK,DECISION)
RECODE GRE (1,2=1)(3,4=2)(5,6=3)
Where,
      1 = No egalitarian, 2 = Low egalitarian
      3 = Medium egalitarian
```

c. COMPUTATION OF COST-BENEFIT (COSTBENFIT)

```
RECODE DISTANCE, BURDEN, OPCOST, GOAL, AFFECTION,
       HAPPINESS (1,2=0)(3,4=1)
COMPUTE COST = SUM(DISTANCE,BURDEN,OPCOST)
COMPUTE BENEFIT = SUM(GOAL,AFFECTION,HAPPINESS)
COMPUTE COSTBENFIT = COST-BENEFIT
Where,
       1 = Low, 2 = Medium, 3 = High
```

APPENDIX -

The Pearson correlation coefficients of variables considered for the causal model.

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
AFERT	1.0000 (3674) P= .	.8168 (3659) P= .000	-.1158 (3674) P= .000	-.0994 (3674) P= .000	-.2859 (3674) P= .000	-.2474 (3674) P= .000	-.1320 (3670) P= .000	.0512 (3658) P= .001	-.0089 (3625) P= .296	.0269 (3673) P= .051	.0275 (3639) P= .048
EXFERT	.8168 (3659) P= .000	1.0000 (3659) P= .	-.0799 (3659) P= .000	-.0553 (3659) P= .000	-.2002 (3658) P= .000	-.1495 (3658) P= .000	-.0903 (3654) P= .000	.0446 (3644) P= .004	-.0186 (3611) P= .132	.0198 (3658) P= .115	.0114 (3625) P= .246
SHARCOOK	-.1158 (3674) P= .000	-.0799 (3659) P= .000	1.0000 (3681) P= .	.4862 (3681) P= .000	.2546 (3680) P= .000	.2123 (3680) P= .000	.1403 (3676) P= .000	-.0598 (3665) P= .000	-.0345 (3631) P= .019	-.0362 (3679) P= .014	-.0707 (3645) P= .000
HOUSWORK	-.0994 (3674) P= .000	-.0553 (3659) P= .000	.4862 (3681) P= .000	1.0000 (3681) P= .	.3164 (3680) P= .000	.2456 (3680) P= .000	.2202 (3676) P= .000	-.1100 (3665) P= .000	-.0724 (3631) P= .000	-.0747 (3679) P= .000	-.0743 (3645) P= .000
CHLDCARE	-.2859 (3674) P= .000	-.2002 (3658) P= .000	.2546 (3680) P= .000	.3164 (3680) P= .000	1.0000 (3680) P= .	.4975 (3680) P= .000	.4025 (3676) P= .000	-.0719 (3664) P= .000	-.0822 (3631) P= .000	-.0678 (3678) P= .000	-.0997 (3644) P= .000
CCLOTHES	-.2474 (3674) P= .000	-.1495 (3658) P= .000	.2123 (3680) P= .000	.2456 (3680) P= .000	.4975 (3680) P= .000	1.0000 (3680) P= .	.3824 (3676) P= .000	.0254 (3664) P= .062	-.0512 (3631) P= .001	-.0437 (3678) P= .004	-.0523 (3644) P= .001
SCHLWORK	-.1320 (3670) P= .000	-.0903 (3654) P= .000	.1403 (3676) P= .000	.2202 (3676) P= .000	.4025 (3676) P= .000	.3824 (3676) P= .000	1.0000 (3676) P= .	.0095 (3660) P= .282	-.0205 (3627) P= .108	-.0423 (3674) P= .005	-.0738 (3641) P= .000
DECISION	.0512 (3658) P= .001	.0446 (3644) P= .004	-.0598 (3665) P= .000	-.1100 (3665) P= .000	-.0719 (3664) P= .000	.0254 (3664) P= .062	.0095 (3660) P= .282	1.0000 (3665) P= .	.0535 (3617) P= .001	.0027 (3664) P= .434	-.0004 (3631) P= .491
DISTANCE	-.0089 (3625) P= .296	-.0186 (3611) P= .132	-.0345 (3631) P= .019	-.0724 (3631) P= .000	-.0822 (3631) P= .000	-.0512 (3631) P= .001	-.0205 (3627) P= .108	.0535 (3617) P= .001	1.0000 (3631) P= .	.0702 (3631) P= .000	.0405 (3603) P= .008
BURDEN	.0269 (3673) P= .051	.0198 (3658) P= .115	-.0362 (3679) P= .014	-.0747 (3679) P= .000	-.0678 (3678) P= .000	-.0437 (3678) P= .004	-.0423 (3674) P= .005	.0027 (3664) P= .434	.0702 (3631) P= .000	1.0000 (3679) P= .	.0671 (3644) P= .000
OPCOST	.0275 (3639) P= .048	.0114 (3625) P= .246	-.0707 (3645) P= .000	-.0743 (3645) P= .000	-.0997 (3644) P= .000	-.0523 (3644) P= .001	-.0738 (3641) P= .000	-.0004 (3631) P= .491	.0405 (3603) P= .008	.0671 (3644) P= .000	1.0000 (3645) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
GOAL	.1402	.1546	-.0676	-.0627	-.0781	-.0594	-.0421	.0048	-.0817	.1097	-.0186
	(3649)	(3634)	(3655)	(3655)	(3655)	(3655)	(3651)	(3641)	(3616)	(3655)	(3624)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .006	P= .386	P= .000	P= .000	P= .132
AFFECTIN	.0819	.0935	-.0348	-.0380	-.0440	-.0576	-.0330	.0178	-.1715	.1563	.0138
	(3632)	(3617)	(3638)	(3638)	(3637)	(3637)	(3633)	(3624)	(3599)	(3638)	(3616)
	P= .000	P= .000	P= .018	P= .011	P= .004	P= .000	P= .023	P= .142	P= .000	P= .000	P= .204
HAPPINES	.2059	.2379	-.0857	-.0725	-.1259	-.1141	-.0572	.0266	-.0636	.0172	.0015
	(3663)	(3648)	(3670)	(3670)	(3669)	(3669)	(3665)	(3654)	(3620)	(3668)	(3637)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .054	P= .000	P= .150	P= .465
FPLAN	-.1369	-.0914	.0046	.0475	.1314	.1115	.1084	-.0084	-.1003	-.0450	-.0552
	(3383)	(3375)	(3389)	(3389)	(3389)	(3389)	(3386)	(3378)	(3351)	(3388)	(3357)
	P= .000	P= .000	P= .395	P= .003	P= .000	P= .000	P= .000	P= .313	P= .000	P= .004	P= .001
INTERVAL	-.4226	-.2693	.0447	.0504	.1[illegible]	.1207	.1080	-.0429	.0101	.0069	-.0233
	(3203)	(3192)	(3209)	(3209)	(3[illegible]	([illegible]209)	(3205)	(3194)	(3171)	(3208)	(3177)
	P= .000	P= .000	P= .006	P= .002	P= .[illegible]	P= [illegible]000	P= .000	P= .008	P= .285	P= .348	P= .095
DURMAR	.1246	.0727	-.1337	-.1777	-.3[illegible]	[illegible]280	-.2961	.0283	.0178	.0440	.0448
	(3397)	(3384)	(3403)	(3403)	(3402)	[illegible]2)	(3399)	(3388)	(3357)	(3401)	(3368)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .050	P= .151	P= .005	P= .005
WEDUC	-.2532	-.1617	.1304	.1963	.1992	.1312	.1223	-.0472	.0263	.0601	.0294
	(3674)	(3658)	(3680)	(3680)	(3679)	(3679)	(3675)	(3664)	(3630)	(3678)	(3644)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .002	P= .057	P= .000	P= .038
HEDUC	-.1739	-.1144	.0516	.1184	.1444	.0609	.2097	.0131	.0435	.0539	.0429
	(3607)	(3591)	(3614)	(3614)	(3613)	(3613)	(3609)	(3604)	(3567)	(3612)	(3583)
	P= .000	P= .000	P= .001	P= .000	P= .000	P= .000	P= .000	P= .216	P= .005	P= .001	P= .005
HINCOME	-.0323	-.0559	-.0951	-.0737	-.0713	-.1524	-.0284	.0427	.0514	.0462	.0581
	(2891)	(2882)	(2895)	(2895)	(2894)	(2894)	(2891)	(2892)	(2858)	(2895)	(2873)
	P= .041	P= .001	P= .000	P= .000	P= .000	P= .000	P= .063	P= .011	P= .003	P= .006	P= .001
FINCOME	-.1615	-.1280	.0316	.0906	.0339	-.0523	.0171	.0368	.0503	.0444	.0012
	(2878)	(2869)	(2881)	(2881)	(2881)	(2881)	(2878)	(2875)	(2849)	(2881)	(2858)
	P= .000	P= .000	P= .045	P= .000	P= .034	P= .002	P= .180	P= .024	P= .004	P= .009	P= .474
HR	.0211	-.0004	-.0470	-.0537	-.0219	-.0804	-.0277	.0138	-.0078	.0161	.0076
	(2802)	(2794)	(2807)	(2807)	(2806)	(2806)	(2803)	(2803)	(2772)	(2807)	(2785)
	P= .132	P= .492	P= .006	P= .002	P= .123	P= .000	P= .072	P= .232	P= .341	P= .197	P= .344

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	AFERT	EXFERT	SHARCOOK	HOUSWORK	CHLDCARE	CCLOTHES	SCHLWORK	DECISION	DISTANCE	BURDEN	OPCOST
HOCCU	-.1193	-.0903	-.0090	.0217	.0135	-.0250	.0988	.0342	.0407	.0215	.0297
	(3577)	(3562)	(3584)	(3584)	(3583)	(3583)	(3579)	(3579)	(3535)	(3582)	(3548)
	P= .000	P= .000	P= .296	P= .097	P= .210	P= .067	P= .000	P= .020	P= .008	P= .099	P= .039
STDLIVNG	.0430	.0182	-.0243	-.0240	-.0523	-.0411	-.0298	-.0216	.0304	.0460	.0096
	(3646)	(3632)	(3652)	(3652)	(3652)	(3652)	(3649)	(3647)	(3607)	(3651)	(3621)
	P= .005	P= .136	P= .071	P= .074	P= .001	P= .007	P= .035	P= .096	P= .034	P= .003	P= .281
SAVING	-.1374	-.1095	-.0050	.0416	.0571	-.0023	.0480	-.0346	-.0614	-.0037	-.0124
	(3546)	(3532)	(3553)	(3553)	(3552)	(3552)	(3549)	(3538)	(3509)	(3551)	(3527)
	P= .000	P= .000	P= .384	P= .007	P= .000	P= .446	P= .002	P= .020	P= .000	P= .414	P= .231
FSUCCESS	-.0452	-.0110	-.0398	.0031	.0138	-.0238	.0044	.0202	-.0596	-.0557	-.0001
	(3668)	(3652)	(3674)	(3674)	(3673)	(3673)	(3669)	(3659)	(3628)	(3672)	(3640)
	P= .003	P= .253	P= .008	P= .426	P= .201	P= .074	P= .395	P= .111	P= .000	P= .000	P= .498
FNCLPLAN	-.0837	-.0566	.0179	.0816	.0980	.0729	.0809	-.0162	-.0720	-.0015	.0211
	(3671)	(3656)	(3677)	(3677)	(3676)	(3676)	(3673)	(3663)	(3630)	(3676)	(3643)
	P= .000	P= .000	P= .139	P= .000	P= .000	P= .000	P= .000	P= .164	P= .000	P= .464	P= .102
INTERUPT	.2177	.1524	-.1620	-.1811	-.1535	-.0898	-.0734	.0322	.0135	.0057	.1121
	(3674)	(3659)	(3681)	(3681)	(3680)	(3680)	(3676)	(3665)	(3631)	(3679)	(3645)
	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .000	P= .026	P= .209	P= .365	P= .000

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	GOAL	AFFECTIN	HAPPINES	FPLAN	INTERVAL	DURMAR	WEDUC	HEDUC	HINCOME	FINCOME	HR
GOAL	1.0000 (3655) P= .	.4187 (3623) P= .000	.3193 (3644) P= .000	.0433 (3368) P= .006	-.0214 (3189) P= .113	-.0534 (3380) P= .001	-.1699 (3655) P= .000	-.1296 (3588) P= .000	-.0867 (2881) P= .000	-.1291 (2867) P= .000	-.0303 (2794) P= .054
AFFECTIN	.4187 (3623) P= .000	1.0000 (3638) P= .	.1951 (3627) P= .000	.0564 (3352) P= .001	-.0242 (3170) P= .086	-.0668 (3362) P= .000	-.1350 (3637) P= .000	-.0764 (3573) P= .000	-.0728 (2867) P= .000	-.1020 (2856) P= .000	-.0191 (2781) P= .157
HAPPINES	.3193 (3644) P= .000	.1951 (3627) P= .000	1.0000 (3670) P= .	.0216 (3380) P= .105	-.0666 (3201) P= .000	.0581 (3392) P= .000	-.1448 (3669) P= .000	-.0872 (3603) P= .000	-.0375 (2888) P= .022	-.0805 (2874) P= .000	-.0145 (2801) P= .222
FPLAN	.0433 (3368) P= .006	.0564 (3352) P= .001	.0216 (3380) P= .105	1.0000 (3389) P= .	.1984 (3021) P= .000	-.1495 (3134) P= .000	.1067 (3388) P= .000	.0748 (3328) P= .000	.0146 (2683) P= .225	-.0013 (2669) P= .474	.0018 (2603) P= .464
INTERVAL	-.0214 (3189) P= .113	-.0242 (3170) P= .086	-.0666 (3201) P= .000	.1984 (3021) P= .000	1.0000 (3209) P= .	-.0370 (3209) P= .018	.2627 (3208) P= .000	.2052 (3155) P= .000	.0783 (2536) P= .000	.1376 (2514) P= .000	.0268 (2475) P= .092
DURMAR	-.0534 (3380) P= .001	-.0668 (3362) P= .000	.0581 (3392) P= .000	-.1495 (3134) P= .000	-.0370 (3209) P= .018	1.0000 (3403) P= .	-.2770 (3402) P= .000	-.1845 (3346) P= .000	.1947 (2689) P= .000	.1337 (2668) P= .000	.0203 (2620) P= .150
WEDUC	-.1699 (3655) P= .000	-.1350 (3637) P= .000	-.1448 (3669) P= .000	.1067 (3388) P= .000	.2627 (3208) P= .000	-.2770 (3402) P= .000	1.0000 (3680) P= .	.5796 (3614) P= .000	.2232 (2894) P= .000	.3441 (2880) P= .000	.0616 (2807) P= .001
HEDUC	-.1296 (3588) P= .000	-.0764 (3573) P= .000	-.0872 (3603) P= .000	.0748 (3328) P= .000	.2052 (3155) P= .000	-.1845 (3346) P= .000	.5796 (3614) P= .000	1.0000 (3614) P= .	.3412 (2869) P= .000	.3467 (2851) P= .000	.0115 (2807) P= .272
HINCOME	-.0867 (2881) P= .000	-.0728 (2867) P= .000	-.0375 (2888) P= .022	.0146 (2683) P= .225	.0783 (2536) P= .000	.1947 (2689) P= .000	.2232 (2894) P= .000	.3412 (2869) P= .000	1.0000 (2895) P= .	.7682 (2807) P= .000	.7109 (2807) P= .000
FINCOME	-.1291 (2867) P= .000	-.1020 (2856) P= .000	-.0805 (2874) P= .000	-.0013 (2669) P= .474	.1376 (2514) P= .000	.1337 (2668) P= .000	.3441 (2880) P= .000	.3467 (2851) P= .000	.7682 (2807) P= .000	1.0000 (2881) P= .	.5114 (2725) P= .000
HR	-.0303 (2794) P= .054	-.0191 (2781) P= .157	-.0145 (2801) P= .222	.0018 (2603) P= .464	.0268 (2475) P= .092	.0203 (2620) P= .150	.0616 (2807) P= .001	.0115 (2807) P= .272	.7109 (2807) P= .000	.5114 (2725) P= .000	1.0000 (2807) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	GOAL	AFFECTIN	HAPPINES	FPLAN	INTERVAL	DURMAR	WEDUC	HEDUC	HINCOME	FINCOME	HR
HOCCU	-.1007	-.0608	-.0434	.0525	.1489	.0428	.3772	.5752	.3981	.3591	-.0060
	(3559)	(3541)	(3573)	(3302)	(3139)	(3326)	(3583)	(3529)	(2834)	(2819)	(2807)
	P= .000	P= .000	P= .005	P= .001	P= .000	P= .007	P= .000	P= .000	P= .000	P= .000	P= .376
STDLIVNG	.0092	.0072	-.0034	-.0236	-.0352	.0411	.0129	-.0323	-.1351	-.1478	-.1334
	(3632)	(3613)	(3641)	(3366)	(3183)	(3376)	(3652)	(3592)	(2884)	(2867)	(2797)
	P= .289	P= .333	P= .418	P= .086	P= .023	P= .008	P= .217	P= .026	P= .000	P= .000	P= .000
SAVING	-.0318	.0141	-.0113	.0816	.0928	.0040	.1276	.1620	.2134	.2055	.1127
	(3527)	(3517)	(3544)	(3272)	(3095)	(3280)	(3553)	(3495)	(2825)	(2813)	(2741)
	P= .029	P= .202	P= .251	P= .000	P= .000	P= .409	P= .000	P= .000	P= .000	P= .000	P= .000
FSUCCESS	.0228	.0365	.0500	.0845	.0452	.0217	.0444	.0871	.2232	.2156	.1575
	(3650)	(3634)	(3663)	(3384)	(3204)	(3397)	(3673)	(3607)	(2890)	(2876)	(2802)
	P= .084	P= .014	P= .001	P= .000	P= .005	P= .103	P= .004	P= .000	P= .000	P= .000	P= .000
FNCLPLAN	-.0019	.0271	.0173	.0755	.0546	-.0859	.1045	.1126	.0849	.0864	.0611
	(3654)	(3637)	(3666)	(3386)	(3206)	(3400)	(3676)	(3610)	(2893)	(2880)	(2805)
	P= .453	P= .051	P= .147	P= .000	P= .001	P= .000	P= .000	P= .000	P= .000	P= .000	P= .001
INTERUPT	.0501	.0189	.0936	-.0042	-.1104	.1275	-.1675	-.0764	.0353	-.2300	.0429
	(3655)	(3638)	(3670)	(3389)	(3209)	(3403)	(3680)	(3614)	(2895)	(2881)	(2807)
	P= .001	P= .127	P= .000	P= .404	P= .000	P= .000	P= .000	P= .000	P= .029	P= .000	P= .012

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

	HOCCU	STDLIVNG	SAVING	FSUCCESS	FNCLPLAN	INTERUPT
HOCCU	1.0000 (3584) P= .	-.0434 (3567) P= .005	.1579 (3461) P= .000	.1246 (3578) P= .000	.0779 (3580) P= .000	.0008 (3584) P= .480
STDLIVNG	-.0434 (3567) P= .005	1.0000 (3652) P= .	-.1444 (3527) P= .000	-.2875 (3647) P= .000	-.1259 (3650) P= .000	.0308 (3652) P= .031
SAVING	.1579 (3461) P= .000	-.1444 (3527) P= .000	1.0000 (3553) P= .	.2404 (3547) P= .000	.2046 (3549) P= .000	-.0475 (3553) P= .002
FSUCCESS	.1246 (3578) P= .000	-.2875 (3647) P= .000	.2404 (3547) P= .000	1.0000 (3674) P= .	.1605 (3672) P= .000	.0011 (3674) P= .474
FNCLPLAN	.0779 (3580) P= .000	-.1259 (3650) P= .000	.2046 (3549) P= .000	.1605 (3672) P= .000	[illegible] [illegible] P= .	-.0256 (3677) P= .061
INTERUPT	.0008 (3584) P= .480	.0308 (3652) P= .031	-.0475 (3553) P= .002	.0011 (3674) P= .474	-.[illegible] ([illegible]) P= [illegible]1	1.0000 (3681) P= .

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED .

APPENDIX C

Estimation procedure

The system of equations for the proposed model of Figure 7.2 include structural and measurement model equations.

The structural equations are:

$$\eta = B\eta + \Gamma\xi + \zeta$$

$$\begin{bmatrix} \text{FERTILITY} \\ \text{INTERVAL} \\ \text{FPLAN} \\ \text{BENEFIT} \\ \text{COST} \\ \text{GRE} \end{bmatrix} = \begin{bmatrix} 0 & \beta_1 & \beta_2 & 0 & 0 & 0 \\ 0 & 0 & \beta_3 & \beta_4 & \beta_5 & \beta_6 \\ 0 & 0 & 0 & \beta_7 & \beta_8 & \beta_9 \\ 0 & 0 & 0 & 0 & 0 & \beta_{10} \\ 0 & 0 & 0 & 0 & 0 & \beta_{11} \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \end{bmatrix} + \begin{bmatrix} \gamma_1 & 0 & 0 & 0 & \gamma_2 \\ \gamma_3 & 0 & 0 & 0 & \gamma_4 \\ \gamma_5 & 0 & 0 & 0 & 0 \\ \gamma_6 & \gamma_7 & \gamma_8 & \gamma_9 & \gamma_{10} \\ \gamma_{11} & \gamma_{12} & \gamma_{13} & \gamma_{14} & \gamma_{15} \\ \gamma_{16} & \gamma_{17} & \gamma_{18} & \gamma_{19} & \gamma_{20} \end{bmatrix} \begin{bmatrix} \text{WEDUC} \\ \text{ECOSTATUS} \\ \text{COMMITMENT} \\ \text{RESIDENCE} \\ \text{DURMAR} \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \\ \zeta_4 \\ \zeta_5 \\ \zeta_6 \end{bmatrix}$$

The measurement equations are:

$$Y = \Lambda y\ \eta + \epsilon$$

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ Y_5 \\ Y_6 \\ Y_7 \\ Y_8 \\ Y_9 \\ Y_{10} \\ Y_{11} \\ Y_{12} \\ Y_{13} \\ Y_{14} \\ Y_{15} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & \lambda_1 & 0 & 0 \\ 0 & 0 & 0 & \lambda_2 & 0 & 0 \\ 0 & 0 & 0 & 0 & \lambda_3 & 0 \\ 0 & 0 & 0 & 0 & \lambda_4 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & \lambda_5 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & \lambda_6 \\ 0 & 0 & 0 & 0 & 0 & \lambda_7 \\ 0 & 0 & 0 & 0 & 0 & \lambda_8 \\ 0 & 0 & 0 & 0 & 0 & \lambda_9 \end{bmatrix} \begin{bmatrix} \text{FERTILITY} \\ \text{INTERVAL} \\ \text{FPLAN} \\ \text{BENEFIT} \\ \text{COST} \\ \text{GRE} \end{bmatrix} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \epsilon_3 \\ \epsilon_4 \\ \epsilon_5 \\ \epsilon_6 \\ \epsilon_7 \\ \epsilon_8 \\ \epsilon_9 \\ \epsilon_{10} \\ \epsilon_{11} \\ \epsilon_{12} \\ \epsilon_{13} \\ \epsilon_{14} \\ \epsilon_{15} \end{bmatrix}$$

and

$$X = \Lambda x\ \xi + \delta$$

$$\begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ X_5 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \text{WEDUC} \\ \text{ECOSTATUS} \\ \text{COMMITMENT} \\ \text{RESIDENCE} \\ \text{DURMAR} \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \end{bmatrix}$$

The lambda(λ) coefficients are fixed at 1.0 in order to facilitate the interpretations by keeping the concepts to have same units of measurement as the indicators. The error variance for the exogenous (δ) and endogenous (ϵ) variables are estimated by substracting reliability coefficients from 1 and multiplying by the variance of the respective indicators in order to get the portion of true and error variance components of the total variance of the indicators. The covariance matrix for the exogenous concepts (ϕ) and error variances for the endogenous concepts (ψ) are left free for the LISREL program to estimate.

The LISREL program finds maximum likelihood parameter estimates by minimizing the following function:

$$F = \log|\Sigma| + tr(S\Sigma')-\log |S|-(p+q)$$

Where Σ is the covariance matrix among all the observed indicators, that is implied by our estimated model,

S is the actual observed covariance among the indicators,

p and q are indicators of exogenous and endogenous variables respectively.

The goodness of fit of the model is assessed by likelihood ratio χ^2 test. The null hypothesis is tested against the most general hypothesis the Σ is unconstrained. The probability level of χ^2 is the probability of obtaining a χ^2 value larger than the value actually obtained given that the model is correct. The degrees of freedom for χ^2 is

$$df = 1/2K(K+1)-t,$$

Where K is the number of variables analyzed and t is the total number of parameters estimated. The degrees of freedom is important to assess the fit of the model, since the χ^2 measure is senstive to sample size. The goodness of fit index (GFI), on the other hand, is independent of sample size and relatively robust against departures from normality and therefore useful to assess the fit of the model in general.

APPENDIX C

DEFINITION OF SYMBOLS IN THE EQUATIONS

ξ_1 = Educational status(WEDUC)
X_1 = Wife's completed years of education

ξ_2 = Economic status (ECOSTATUS)
X_2 = Husband's current annual income

ξ_3 = Work commitment(COMMITMENT)
X_3 = Number of work interruptions

ξ_4 = Residence (RESIDENCE)
X_4 = Residential status in youth

ξ_5 = Marriage duration (DURMAR)
Y_5 = Marital duration in years

η_1 = Fertility(FERTILITY)
Y_1 = Number of live births adjusted for age

η_2 = Rate of childbearing(INTERVAL)
Y_2 = First birth interval in years

η_3 = Fertility planning(FPLAN)
Y_3 = Use of contraceptives in planning pregnancies

η_4 = Subjective benefit of children(BENEFIT)
Y_4, Y_5, Y_6 = Having a child provides goal/affection/happiness in life (Strongly disagree=1 ... Strongly agree=4)

η_5 = Subjective cost of children(COST)
Y_7, Y_8 = Children distance the spouses (DISTANCE)/children means heavy responsibility (BURDEN)(Strongly disagree=1 ... strongly agree=4)
Y_9 = Children reduce work opportunity outside home (OPCOST)(Not at all=1 ... A lot=4)

η_6 = Gender role egalitarianism(GRE)
Y_{10}, Y_{11}, Y_{12} = Who does the cooking (SHARCOOK)/housework(HOUSWORK)/taking care of

children(CHLDCARE)/shopping for children's cloth(CCLOTHES)/ supervision of children's school work(SCHLWORK)? (Always you=1 ... mostly partner=4)
Y_{15} = Who makes the financial decision? (Mainly women=1 ... always partner=4)

λs (lambda) = structural coefficients relating unobserved or theoretical variables to observed variables

ϕs (phi) = covariance among the exogenous theoretical variables

γs (gamma) = structural coefficients relating exogenous, theoretical variables (ξs) to the endogenous variables (ηs)

βs (Beta) = structural coefficients relating the endogenous theoretical variables

δs and ϵs (delta and epsilon) = measurement errors in observed variables, X and Y, respectively

ζs (zeta) = errors of prediction.

APPENDIX D

SECTION 1 - RESPONDENT'S BACKGROUND

→ Exact time now: _____

0 2 (1-9)

100. To start with, we need some background information. Do you currently live in a city, a small town or on a farm?

City, town 1
Small town 2
Farm 3

(10-13)

(14)

101. What municipality do you live in?

_____
(name of municipality)

102. Have you always lived in this municipality?

Yes. . . . . 1 → GO TO 109
No 2

(15)

103. How many years have you lived there?

_____
(number of years)

(16-17)

104. Were you born in : _____ ?
(Respondent's province)

Yes. . . . . 1 → GO TO 109
No 2

(18)

105. Were you born in Canada?

Yes 1

106. In what province?

_____
(province)

GO TO 109

(19)

No 2

107. In which country were you born?

_____
(country)

(20-21)

108. In what year did you arrive in Canada?

19____

(22-26)

109. Was your father born in Canada?

Yes 1
No 2
Don't know. 8

☐ (27)

110. Was your mother born in Canada?

Yes 1
No 2
Don't know. 8

☐ (28)

111. Up to about age 12, did you live mostly in a rural area, in a small town or in a big city?

Rural area. 1
Small town. 2
Big city. 3
Don't know. 8

☐ (29)

112. In total how many years of education did you complete?

_____ (SPECIFY)

If 11 years of education or less → GO TO 115

☐☐ (30-31)

113. What is the highest degree, certificate, diploma or grade you have obtained?

_____ (SPECIFY)

☐☐ (32-33)

114. How many years of education had you completed by the time you first started to work (or when you finished regular studying, if you have never worked)?

_____

☐☐ (34-35)

115. Including yourself how many children did your mother have and which one were you, the oldest, the second oldest,...?

A) _____ (number of children) → B) _____ (order)

☐☐ (36-39)

116. To what ethnic or cultural group did you or your male ancestor belong on first coming to North America?

French	01	Ukrainian	07
English	02	Dutch	08
Irish	03	Polish	09
Scottish	04	Jewish	10
German	05	Chinese	11
Italian	06	Greek	12

Other: _____
(SPECIFY)

(40-41)

117. What is your present religion?

Roman Catholic	01	Jewish	09
Protestant (no specification)	02	Ukrainian Catholic	10
United Church	03	Pentecostal	11
Anglican	04	Jehovah's Witnesses	12
Presbyterian	05	Mennonite	13
Lutheran	06	Salvation Army	14
Baptist	07	Islam	15
Greek Orthodox	08	No religion	95

Other: _____
(SPECIFY)

(42-43)

118. How often do you attend religious services? Would you say...

... every week	1
... every month	2
... a few times a year	3
... rarely, or	4
... never	5

(44)

119. What language do you speak most often at home?

English 01
French. 02
German. 03
Italian 04
Ukrainian 05
Other: _____ (SPECIFY)

(45-46)

120. What is the language you first learned in childhood and still understand?

English 01
French. 02
German. 03
Italian 04
Ukrainian 05
Other: _____ (SPECIFY)

(47-48)

SECTION 2 - OPINIONS AND ATTITUDES ON THE FAMILY

201. In your opinion, when a man and woman decide to live together, is it very important, important, not very important or not at all important for them to get married?

Very important	1	
Important.	2	☐ (49)
Not very important	3	
Not at all important	4	

202. In general, would you say you more or less agree or disagree with the following statement: "Marriage is a permanent union which should only be broken for very serious reasons"?

Agree.	1	☐ (50)
Disagree	2	

203. When two people decide to get married, is it absolutely necessary, fairly necessary or not necessary that ...

	Absolutely necessary	Fairly necessary	Not necessary	
a) ... they love each other strongly . .	1	2	3	☐ (51)
b) .... there is a strong sexual attraction between them . . .	1	2	3	☐ (52)
c) ... they want to have children	1	2	3	☐ (53)
d) ... they feel the same way about wanting or not wanting to have children. . .	1	2	3	☐ (54)
e) ... they intend to stay married for the rest of their lives . .	1	2	3	☐ (55)
f) ... the couple has the financial means to support itself . .	1	2	3	☐ (56)
g) ... they have a similar social background.	1	2	3	☐ (57)

204. In order for a couple to live together for a long time, would you say that it is very important, important, not very important or not at all important that ...

	Very important	Important	Not very important	Not at all important	
a) ... the strong love at the beginning endure forever	1	2	3	4	☐ (58)
b) ... the strong love at the beginning turn at least into deep affection	1	2	3	4	☐ (59)
c) ... their sexual life be satisfactory	1	2	3	4	☐ (60)
d) ... both be faithful to the other	1	2	3	4	☐ (61)

205. Do you find that it is acceptable or not acceptable for a man and woman to decide to live together without marriage ...

	Acceptable	Not acceptable	
a) ... if they want to make sure that their future marriage will last	1	2	☐ (62)
b) ... if they are attracted to one another but do not want to make any long term commitments	1	2	☐ (63)

c) In your opinion, is it acceptable for young women to have a sexual life before getting married?

Yes 1
No. . . . . 2 ☐ (64)

d) for young men?

Yes 1
No. . . . . 2 ☐ (65)

207. In order for you to be generally happy in life, is it very important, important, not very important or not at all important...

	Very important	Important	Not very important	Not at all important	
a) ... to have a lasting relationship as a couple	1	2	3	4	(66)
b) ... to be married	1	2	3	4	(67)
c) ... to have at least one child	1	2	3	4	(68)
d) ... to be able to take a job outside the home	1	2	3	4	(69)
e) ... to be free to do as you wish	1	2	3	4	(70)

208. On the whole, would you say that you have had a very happy life, a fairly happy, a fairly unhappy or a very unhappy life up to now?

Very happy life 1
Fairly happy life 2
Fairly unhappy life 3
Very unhappy life 4

(71)

209. Would you say that being married adds something positive to the relationship that helps the couple to get through difficult times?

Yes 1
No. 2

(72)

210. Would you say that being married creates certain obligations which have a negative effect on the relationship?

Yes 1
No. 2

(73)

211. When a couple decide to have children, do you think that it is necessary that they get married?

Yes 1
No. 2

(74)

212. Among the people you know, are couples living together accepted in the same way as married couples?

Yes	1	
No.	2	(75)

213. If you were in the following circumstances, would you be likely to get divorced? Try to put yourself in the situation described.

	Would be likely to get divorced	Would not be likely to get divorced	
a) ... If the initial strong love no longer exists and there is only friendship and respect left.	1	2	(10)
b) ... If your husband was unfaithful.	1	2	(11)
c) ... If there were no longer any common interests except financial security.	1	2	(12)

0 3 (1-9)

214. Do you think that divorces should only be granted for the reasons specified in the law or do you think that couples should be allowed to get divorced simply because they want to?

For reasons specified in the law. . .	1	
Because the couple want to.	2	(13)

215. Do you approve without reservation, approve with reservations or completely disapprove of divorce in the following circumstances: ...

	Approve without reservation	Approve with reservations	Completely disapprove	
a) ...the couple have very young children	1	2	3	(14)
b) ... the couple have teenagers	1	2	3	(15)
c) ... the couple have no children	1	2	3	(16)

216. Do you find it acceptable for a divorced woman to live with her children and a new partner without being married to him?

Yes 1
No. . . . . 2 ☐ (17)

217. On the whole, would you say that you strongly agree, agree, disagree or strongly disagree with the following statements:

	Strongly agree	Agree	Disagree	Strongly disagree	
a) Having a child provides a goal in life that nothing else can replace.	1	2	3	4	☐ (18)
b) Having children tends to distance the spouses from one another.	1	2	3	4	☐ (19)
c) Becoming parents means taking on heavy responsibilities.	1	2	3	4	☐ (20)
d) Having a child provides an irreplaceable source of affection.	1	2	3	4	☐ (21)

218. Do you think that looking after the children should be done only by the woman, mostly by the woman, equally shared by both partners or done mainly by the man?

Only by the woman 1
Mostly by the woman 2
Equally shared by both partners . . 3 ☐ (22)
Mainly by the man 4

219. Do you think that household chores such as the cooking or the housework should be done only by the woman, mostly by the woman, equally shared by both partners or done mainly by the man?

Only by the woman 1
Mostly by the woman . . . . . 2 ☐ (23)
Equally shared by both partners . . 3
Mainly by the man 4

220. Do you find that it is a good thing for each partner in a couple to have their own close friends who they each see without the other?

Yes 1
No. . . . . 2 ☐ (24)

221. Do you find it acceptable for a woman to decide to have a child without a husband/partner in the house?

Yes 1
No. . . . . 2 ☐ (25)

222. Could you make such a decision to have a child without the presence of a husband/partner in the house?

Yes 1
No. . . . . 2 ☐ (26)

223. Currently there is a lot of talk about artificial insemination; do you agree with this way of becoming pregnant?

Yes 1
No. . . . . 2 ☐ (27)
Don't know about insemination . . 3

224. There is also a lot of talk about couples who cannot have children and who ask another woman to bear a child for them in exchange for a sum of money. Do you strongly agree, agree, disagree or strongly disagree with this?

Strongly agree. 1
Agree 2
Disagree. . . . . 3 ☐ (28)
Strongly disagree 4

225. In your opinion, is there a risk that an only child will have more problems than a child in a family with other children?

Yes . . . . . 1 → GO TO 227 ☐ (29)
No. 2

226.

226. Do you believe on the contrary that an only child will in fact have fewer problems because his parents will be able to devote more time to him?

Yes 1
No. . . . . 2 ☐ (30)

227. In your opinion, do parents have a second child in order to create a better environment for the children or rather for their own personal satisfaction?

Better environment for children . 1
Parent's satisfaction . . . . . 2 ☐ (31)

228. Assuming abortion were legal, would you be for or against a woman having an abortion...

	For	Against	Don't know	
a) ... if the pregnancy is endangering the mother's life	1	2	8	☐ (32)
b) ... if the pregnancy puts the mother's health in danger . .	1	2	8	☐ (33)
c) ... if the woman had been raped .	1	2	8	☐ (34)
d) ... if there were good reasons to believe that the child would be physically or mentally handicapped	1	2	8	☐ (35)
e) ... if the woman was not married .	1	2	8	☐ (36)
f) ... if the household does not have the financial means to support a child	1	2	8	☐ (37)
g) ... if the woman wants an abortion for a reason she feels is valid	1	2	8	☐ (38)

SECTION 3 - MARRIAGE BACKGROUND

301. Now, I have some questions about your marital status. Are you now married, living with a partner (common-law), separated, divorced, widowed or have you never been married?

- Married 1
- Living with partner . . . . 2 → MARGIN PARTNER/ GO TO 320
- Separated . . . . . 3 → GO TO 337
- Divorced. . . . . 4 → GO TO 337
- Widowed . . . . . 5 → GO TO 337
- Never married . . . . . 6 → GO TO 353

☐ (39)

xxxx

307. How many times? Number of times : _____

NOTE TO INTERVIEWER: For each of these marriages (excluding the current marriage) ask the following questions, then go to 313

	... the first time (1)	... the second time (2)	... the third time (3)
308. When did you get married for ...	_____ 19____ (month) (year)	_____ 19____ (month) (year)	_____ 19____ (month) (year)
309. Did this marriage end with your husband's death?	Yes. . . . . 1 GO TO 310	Yes. . . . . 1 GO TO 310	Yes. . . . . 1 GO TO 310
	No . . . . . 2 GO TO 311	No . . . . . 2 GO TO 311	No . . . . . 2 GO TO 311
310. (HUSBAND DIED) When did he die?	_____ 19____ (month) (year) (GO TO NEXT MARRIAGE)	_____ 19____ (month) (year) (GO TO NEXT MARRIAGE)	_____ 19____ (month) (year) (GO TO 313)
311. When did you separate?	_____ 19____ (month) (year)	_____ 19____ (month) (year)	_____ 19____ (month) (year)
312. When did you get your divorce?	_____ 19____ (month) (year)	_____ 19____ (month) (year)	_____ 19____ (month) (year)
			GO TO 313

313. Have you ever lived with a partner without being married?

Yes 1 (48)
No. . . . . 2 → GO TO 400 (49)

314. How old were you the first time you started living with a partner?

_____ (age at beginning) (50-51)

315. How long did you live with this first partner?

_____ (duration) (52-53)

316. Did you ever get married to this person?

Yes . . . . . 1 → GO TO 400
No. 2 (54)

317. Did you live with your current husband before you married him?

Yes 1
No. . . . . 2 → GO TO 400 (55)

318. For how long?

_____ (duration) → GO TO 400 (56-57)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

COMMON-LAW ONLY

320. When did you and your partner start living together?

_____ (month) 19 _____ (year) (58-61)

321. Before this relationship started, had you ever been married?

Yes 1
No. . . . . 2 → GO TO 332 (62)

322.

322. How many times have you been married? Number of times: _____

NOTE TO INTERVIEWER: For each of these marriages, ask the following questions, then go to 328.

	... the first time (1)	... the second time (2)	... the third time (3)
323. When did you get married for ...	_____ (month) 19_____ (year)	_____ (month) 19_____ (year)	_____ (month) 19_____ (year)
324. Did this marriage end with your husband's death?	Yes . . . . . 1 GO TO 325 No. . . . . 2 GO TO 326	Yes . . . . 1 GO TO 325 No. . . . . 2 GO TO 326	Yes . . . . 1 GO TO 325 No. . . . 2 GO TO 326
325. (HUSBAND DIED) When did he die?	_____ (month) 19_____ (year) (GO TO NEXT MARRIAGE)	_____ (month) 19_____ (year) (GO TO NEXT MARRIAGE)	_____ (month) 19_____ (year) (GO TO 328)
326. When did you separate?	_____ (month) 19_____ (year)	_____ (month) 19_____ (year)	_____ (month) 19_____ (year)
327. When did you get your divorce?	_____ (month) 19_____ (year) No divorce ☐	_____ (month) 19_____ (year) No divorce ☐	_____ (month) 19_____ (year) No divorce ☐ GO TO 328

328. Did you at any time live with another partner without being married?

Yes 1
No. . . . . 2 → GO TO 335

(63)
(64)

329. How old were you the first time you started living with a partner?

_____ (age at beginning)

(65-66)

330. How long did you live with this first partner?

_____ (duration)

(67-68)

331. Did you ever get married to this person?

Yes . . . . . 1 → GO TO 335
No. . . . . 2 → GO TO 335

(69)

332. Did you at any time live with another partner?

Yes 1
No. . . . . 2 → GO TO 335

(70)

333. How old were you the first time you started living with a partner?

_____ (age at beginning)

(71-72)

334. How long did you live with this first partner?

_____ (duration)

(73-74)

335. Do you plan to get married?

Yes . . . . . 1 → GO TO 400
No. 2

(75)

336. Do you intend to live with your partner as long as possible without getting married?

Yes . . . . . 1 → GO TO 400
No. . . . . 2 → GO TO 400

0 4 (1-9)

(10)

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

SEPARATED, WIDOWED, DIVORCED ONLY

337. How many times have you been married? Number of times: _____

NOTE TO INTERVIEWER: For each of these marriages, ask the following questions, then go to 343.

	... the first time (1)	... the second time (2)	... the third time (3)
338. When did you get married for ...	_____ 19____ (month) (year)	_____ 19____ (month) (year)	_____ 19____ (month) (year)
339. Did this marriage end with your husband's death?	Yes . . . . . 1 GO TO 340 No. . . . . 2 GO TO 341	Yes . . . . . 1 GO TO 340 No. . . . . 2 GO TO 341	Yes . . . . . 1 GO TO 340 No. . . . . 2 GO TO 341
340. (HUSBAND DIED) When did he die?	_____ 19____ (month) (year) (GO TO NEXT MARRIAGE)	_____ 19____ (month) (year) (GO TO NEXT MARRIAGE)	_____ 19____ (month) (year) GO TO 343
341. When did you separate?	_____ 19____ (month) (year)	_____ 19____ (month) (year)	_____ 19____ (month) (yea
342. When did you get your divorce?	_____ 19____ (month) (year) No divorce ☐	_____ 19____ (month) (year) No divorce ☐	_____ 19____ (month) (yea No divorce ☐ GO TO 343

343. Have you ever lived with a partner without being married?

Yes . . . . . 1 → GO TO 345 (11)
No 2 (12)

344. Given your personal situation, do you expect to remarry, to live with a partner without getting married again or to stay as you are?

To remarry . . . . . 1 → GO TO 400
To live with a partner . . 2 → GO TO 400
To stay as I am . . . . . 3 → GO TO 400 (13)
Other: _____ 4 → GO TO 400

345. Are you living with a partner now?

Yes . . . . . 1 → MARGIN/PARTNER
No . . . . . 2 → GO TO 348 (14)

346. When did you start living with your partner?

_____ 19 _____
(month) (year) (15-18)

347. Given your personal situation, do you expect to remarry or to continue living with your partner without getting married again?

To remarry . . . . . 1 → GO TO 349
To live with my partner . 2 → GO TO 349 (19)
Other: _____ 3 → GO TO 349

348. Given your personal situation, do you expect to remarry, to live with a partner again without getting married or to stay as you are?

To remarry 1
To live with a partner again 2 (20)
To stay as I am 3
Other: _____ 4

349. Before your first marriage, did you live with a partner?

Yes 1
No. . . . . 2 → GO TO 400 (21)

350. How old were you the first time you started living with a partner?

(age at beginning) (22-23)

351. How long did you live with this first partner?

(duration) (24-25)

352. Did you ever get married to this person?

Yes . . . . . 1 → GO TO 400
No. . . . . 2 → GO TO 400 (26)

XXXX

356. How old were you the first time you started living with a partner?

_____ (age at beginning) (30-31)

357. How long did you live with this first partner?

_____ (duration) (32-33)

358. Do you expect to ...

... remain single and live without a husband/partner . . . . . 1 → GO TO 400

... live with a partner and afterwards get married . . . . . 2 → GO TO 400

... get married without living together beforehand . . . . . 3 → GO TO 400

... live with a partner without ever getting married . . . . . 4 → GO TO 400

(34)

359. When did you start living with your partner?

_____ (month) 19_____ (year) (35-38)

360. Before living with your present partner, did you ever live with another partner?

Yes 1 (39)

No. . . . . 2 → GO TO 364

361. How many times did you live with other partners?

_____ (number of times) (40)

362. How old were you the first time you started living with a partner?

_____ (age at beginning) (41-42)

363. How long did you live with this first partner?

_____ (duration) (43-44)

364. Do you plan to get married?

Yes . . . . . 1 → GO TO 400

No. . . . . 2 ☐ (45)

365. Do you intend to live with your partner as long as possible without getting married?

Yes 1

No. . . . . 2 ☐ (46)

SECTION 4 - MATERNITY HISTORY

400. We would like to get a complete record of all the children each woman has given birth to in her life or has adopted; to begin with, have you ever adopted a child?

Yes . . . . . 1 → How many? _____ (47) (48)

No. 2

401. How many LIVE BIRTHS have you had up to now including those who died after birth or who do not live with you ?

- DO NOT INCLUDE CURRENT PREGNANCY, IF APPLICABLE -

None. 0

1 child . . . . . 1 → MARGIN LIVE BIRTHS/GO TO 407 (49-50)

2 or more:

_____ → MARGIN LIVE BIRTHS/GO TO 405

(specify number)

402. Are you pregnant now?

Yes . . . . . 1 → MARGIN PREGNANT / GO TO 408 (51)

Possibly. . . . . 2 → MARGIN PREGNANT / GO TO 408

No. 3

403. Have you had any pregnancies which ended in a miscarriage, stillbirth or abortion?

Yes . . . . . 1 → GO TO 410 (52)

No. 2

404. So you have never been pregnant up to now?

Never pregnant. . . . . 1 → GO TO 500 (53)

Has been pregnant . . . . . 2 → GO BACK TO 401

405. Have you ever given birth to twins (or triplets or quadruplets)?

Yes 1 (54)

No. . . . . 2 → GO TO 407

406.

BLANK PAGE

406. How many times? . . . ☐ (55)

(number of times)

407. Are you pregnant now? ☐ (56)

Yes . . . . . 1 → MARGIN PREGNANT
Possibly. . . . 2 → MARGIN PREGNANT
No. . . . . 3 → GO TO 409

408. What month is the baby due? ☐☐ (57-58)

(month)

409. Have you had any other pregnancies which ended in a miscarriage, stillbirth or abortion? ☐ (59)

Yes 1
No. . . . . 2 → GO TO 411

410. How many of these pregnancies? ☐☐ (60-61)

("Other pregnancies") → MARGIN OTHER PREGNANCIES

411. In summary, you have had in all, including the present pregnancy if applicable: ☐☐ (62-63)

TOTAL PREGNANCIES → WRITE IN THE MARGIN

of which:

(times) pregnancies ended with live births

(times) pregnancies ended in a miscarriage, stillbirth or abortion.

NOTE TO INTERVIEWER:
- If respondent is pregnant for the first time → GO TO 500;
- If respondent has had no live births → GO TO 413;
- If respondent has had live births → GO TO 412.

412. Now if you don't mind, we'll try and trace the dates of these pregnancies. Let's begin with the pregnancies that ended with live births.

INTERVIEWER: Ask the following questions for each live birth; then if "other pregnancies" go to 413, if "only live births", go to 500 after 412.
A - When was your first (second, etc...) child born?
B - Was the child a boy or a girl?
C - Is this child still alive? If child has died ⟶ When?

(IF TWINS, use one line for each child, and connect the lines on the left with a bracket).

1st child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

2nd child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

3rd child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

4th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

5th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

6th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

7th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

8th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ ⟶ _____ (month of death) 19 ____

9th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

10th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

11th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

12th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

13th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

14th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

15th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

16th child
A) _____ (birth month) 19 ____ B) SEX: Boy ☐ Girl ☐
C) ALIVE ☐ DECEASED ☐ → _____ (month of death) 19 ____

17 children or more → Date of birth of last child born live _____ (month) 19 __

INTERVIEWER: SEE MARGIN; IF "OTHER PREGNANCIES" → GO TO 413
IF NO "OTHER PREGNANCIES" → GO TO 500

413. Let's take a look at those pregnancies which did not end with live births. You told me that you have had _____ such pregnancies.
(Margin)

INTERVIEWER: For each of the pregnancies which did not end with live births, ask the following questions; then after go to 500.
A- Did the first (second, third, etc.) one of these pregnancies end in a miscarriage, stillbirth or abortion? B- How many months did the pregnancy last? C- When did it happen?

1st time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

2nd time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

3rd time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

4th time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

5th time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

6th time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

7th time
A) Pregnancy ended in: Miscarriage ☐ Stillbirth ☐ Abortion ☐
B) Length of pregnancy: _____ C) When: _____ (month) 19____

SECTION 5 - KNOWLEDGE AND USE OF CONTRACEPTIVE METHODS

						0	5 (1-9)

500. Now, I'd like to talk to you about another subject. As you know, there are various methods to either postpone or prevent pregnancy. I'm going to mention several contraceptive methods and I'd like you to tell me whether you've heard of them and whether you have used them.

	500A. Have you heard of ...		500B. Have you used ...			
	No	Yes	Yes	No	DNK	
1. ... the pill.	2	1 →	1	2	8	(10-11)
2. ... IUD (intrauterine device)	2	1 →	1	2	8	(12-13)
3. ... foam, jelly or cream. .	2	1 →	1	2	8	(14-15)
4. ... douching after intercourse	2	1 →	1	2	8	(16-17)
5. ... condoms (rubbers) . . .	2	1 →	1	2	8	(18-19)
6. ... diaphragm	2	1 →	1	2	8	(20-21)
7. ... withdrawal (pulling out)	2	1 →	1	2	8	(22-23)
8. ... abstinence for a month or more	2	1 →	1	2	8	(24-25)
9. ... rhythm methods such as temperature or calendar	2	1 →	1	2	8	(26-27)
10. ... female sterilization (tubal ligation). . . .	2	1 →	1	2	8	(28-29)
11. ... male sterilization (vasectomy)	2	1 →	1	2	8	(30-31)
12. ... abortion.	2	1 →	1	2	8	(32-33)

ATTENTION INTERVIEWER:
- IF THE RESPONDENT HAS NEVER USED A CONTRACEPTIVE METHOD, GO TO 606.
- IF THE RESPONDENT USES OR HAS USED THE PILL, ASK QUESTION 501.
- FOR THE OTHERS, GO TO 503.

501. Have you ever stopped using the pill for a reason other than wanting to get pregnant?

Yes 1
No. . . . . 2 → GO TO 503 ☐ (34)

502. What was the main reason why you stopped using the pill?

_____ ☐☐ (35-36)

_____

503. SEE MARGIN TOTAL PREGNANCIES:

If one pregnancy or more → GO TO 510
Only if no pregnancies at all → GO TO 504

NO PREGNANCIES AT ALL

504. At what age did you start using contraception?

_____ ☐☐ (37-38)
(age)

505. Among the contraceptive methods you have used, which one did you use the longest and for how long?

_____ → _____ ☐☐☐☐ (39-42)
(method) (duration)

506. Are you or your husband/partner using a contraceptive method now?

Yes 1
No. . . . . 2 → GO TO 606 ☐ (43)

507. Which contraceptive method are you using and how long have you been using it?

_____ → _____ ☐☐☐☐ (44-47)
(method) (duration)

ACCORDING TO THE METHOD:

Respondent or her husband/partner has been sterilized	Other method than sterilization
GO TO 607	GO TO 609

☐☐ (48-49)

S10. Now let's try recalling when you used contraception between each of your pregnancies including, if applicable, current pregnancy, miscarriage, stillbirth or abortion. You told me that you have been pregnant in total: _____ (see margin) times.

S11. Before your first pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method. . . . . 1 → GO TO S13
More than one method. 2
No contraceptive method . . . . . 3 → GO TO S15
Can't remember. . . . . 8 → GO TO S15

S12. Which method did you use for the longest time before your first pregnancy and how long did you use it?

_____ (method) _____ (duration)

S13. Which was the last method you used before your first pregnancy and how long did you use it?

_____ (method) _____ (duration)

S14. When you became pregnant the first time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it 1
Had forgotten 2
Had stopped 3

S15. When you became pregnant the first time ...

... did you want to become pregnant at that particular time 1
... would you have preferred to become pregnant at some other time 2
... would you have preferred not to have a child 3
Don't know. 8

IF TWO PREGNANCIES OR MORE → GO TO S21;
IF ONLY ONE PREGNANCY → GO TO S00.

S21. Between your first and second pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method. . . . . 1 → GO TO S23
More than one method. 2
No contraceptive method . . . . . 3 → GO TO S25
Can't remember. . . . . 8 → GO TO S25

S22. Which method did you use for the longest time before your second pregnancy and how long did you use it?

(method) → (duration)

S23. Which was the last method you used before your second pregnancy and how long did you use it?

(method) → (duration)

S24. When you became pregnant the second time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it. 1
Had forgotten 2
Had stopped 3

S25. When you became pregnant the second time ...

... did you want to become pregnant at that particular time 1
... would you have preferred to become pregnant at some other time 2
... would you have preferred not to have a child 3
Don't know. 8

IF THREE PREGNANCIES OR MORE → GO TO S31
IF ONLY TWO PREGNANCIES → GO TO 600

531. Between your second and third pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method	1	→ GO TO 533
More than one method	2	
No contraceptive method	3	→ GO TO 535
Can't remember	8	→ GO TO 535

532. Which method did you use for the longest time before your third pregnancy and how long did you use it?

(method) _____ (duration) _____

533. Which was the last method you used before your third pregnancy and how long did you use it?

(method) _____ (duration) _____

534. When you became pregnant the third time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it	1
Had forgotten	2
Had stopped	3

535. When you became pregnant the third time ...

... did you want to become pregnant at that particular time	1
... would you have preferred to become pregnant at some other time	2
... would you have preferred not to have a child	3
Don't know	8

IF FOUR PREGNANCIES OR MORE → GO TO 541
IF ONLY THREE PREGNANCIES → GO TO 600

Université de Montréal
Centre de sondage

S41. Between your third and fourth pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method. . . . . 1 → GO TO S43
More than one method. 2
No contraceptive method . . . . . 3 → GO TO S45
Can't remember. . . . . 8 → GO TO S45

S42. Which method did you use for the longest time before your fourth pregnancy and how long did you use it?

(method) → (duration)

S43. Which was the last method you used before your fourth pregnancy and how long did you use it?

(method) → (duration)

S44. When you became pregnant the fourth time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it. 1
Had forgotten 2
Had stopped 3

S45. When you became pregnant the fourth time ...

... did you want to become pregnant at that particular time 1
... would you have preferred to become pregnant at some other time 2
... would you have preferred not to have a child 3
Don't know. 8

IF FIVE PREGNANCIES OR MORE → GO TO S51
IF ONLY FOUR PREGNANCIES → GO TO 600

551. Between your fourth and fifth pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method. . . . . 1 → GO TO 553
More than one method. 2
No contraceptive method . . . . . 3 → GO TO 555
Can't remember. . . . . 8 → GO TO 555

552. Which method did you use for the longest time before your fifth pregnancy and how long did you use it?

(method) _____ (duration) _____

553. Which was the last method you used before your fifth pregnancy and how long did you use it?

(method) _____ (duration) _____

554. When you became pregnant the fifth time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it 1
Had forgotten 2
Had stopped 3

555. When you became pregnant the fifth time ...

... did you want to become pregnant at that particular time 1
... would you have preferred to become pregnant at some other time 2
... would you have preferred not to have a child 3
Don't know. 8

IF SIX PREGNANCIES OR MORE → GO TO 561
IF ONLY FIVE PREGNANCIES → GO TO 600

Université de Montréal
Centre de sondage

561. Between your fifth and sixth pregnancy, did you use one contraceptive method, more than one method or no contraceptive method at all?

One contraceptive method	1	→ GO TO 563
More than one method	2	
No contraceptive method	3	→ GO TO 565
Can't remember	8	→ GO TO 565

562. Which method did you use for the longest time before your sixth pregnancy and how long did you use it?

(method) _____ (duration) _____

563. Which was the last method you used before your sixth pregnancy and how long did you use it?

(method) _____ (duration) _____

564. When you became pregnant the sixth time, were you still using the contraceptive method, or had you forgotten to use it, or had you chosen to stop using it?

Still using it	1
Had forgotten	2
Had stopped	3

565. When you became pregnant the sixth time ...

... did you want to become pregnant at that particular time	1
... would you have preferred to become pregnant at some other time	2
... would you have preferred not to have a child	3
Don't know	8

IF MORE THAN 6 PREGNANCIES, USE SEPARATE SHEET FOR EACH PREGNANCY INDICATING RESPONDENT'S REGISTRATION NUMBER.

IF ONLY SIX PREGNANCIES → GO TO 600

SECTION 6 - CONTRACEPTION CURRENTLY USED AND FERTILITY EXPECTATIONS

IF PREGNANT NOW → GO TO 614

600. Are you or your husband/partner using a contraceptive method now?

Yes 1

No. . . . . 2 → GO TO 604 ☐ (50)

601. Which method are you using and how long have you been using it?

(method) _____ (duration) _____ ☐☐ (51-54)

ACCORDING TO THE METHOD :

Respondent or her husband/ partner has been sterilized (A)

602A. Between your last pregnancy and the time of the operation (sterilization) did you use a contraceptive method?

Yes 1

No. . . . . 2 → GO TO 607

603A. Which method did you use for the longest time and how long did you use it?

(1) _____ (method)

(2) _____ (duration)

→ GO TO 607

Other method than sterilization (B)

602B. Since your last pregnancy have you used other methods of contraception?

Yes 1

No. . . . . 2 → GO TO 609 ☐ (55)

603B. Which method did you use for the longest time and how long did you use it?

(1) _____ (method)

(2) _____ (duration) ☐☐ (56-59)

→ GO TO 609

Université de Montréal
Centre de sondage

604. Since your last pregnancy, have you used any method of contraception?

Yes 1
No. . . . . 2 → GO TO 606 ☐ (60)

605. Which method have you used the longest and how long did you use it?

_____ (method) → _____ (duration) ☐☐ (61-64)

606. Have you or your husband/partner, if applicable, had an operation which would make it impossible for you to have children?

Yes 1
No. . . . . 2 → GO TO 608 ☐ (65)

607. Among the following operations, which one or ones did you, or your husband/partner if applicable, have and when did they take place? (INTERVIEWER: ASK EACH QUESTION a, b, c AND d)

	Yes	No	
a) ... tubal ligation?	1	2	☐ (66)

_____ (month) 19 ☐☐ (year) ☐☐ (67-68) ☐☐ (69-70) ☐ (71)

If you had the decision to make today, would you make the same one regarding the tubal ligation?

Yes 1
No. 2

0 6 ☐ (1-9)

607. b) ... hysterectomy? — Yes 1 — No 2 — (10)

_____ (month) 19____ (year) — (11-12) (13-14)

If you had not had this operation, would you have had a tubal ligation? — (15)

Yes 1

No. 2

c) ... another operation which made you sterile? — 1 — 2 — (16)

_____ (Specify which operation) — (17-18)

_____ (month) 19____ (year) — (19-20) (21-22)

If you had not had this operation, would you have had a tubal ligation? — (23)

Yes 1

No. 2

d) ... if applicable, has your husband/partner had a vasectomy? — 1 — 2 — (24)

_____ (month) 19____ (year) — (25-26) (27-28)

→ GO TO 700 ←

Université de Montréal
Centre de sondage

608. Since you are not using any contraceptive method at the present time, which of the following statements best describes your situation? You are not using contraception because ...

... you do not have a husband/partner right now . . . 1
... you want to become pregnant . . . . . 2 → GO TO 610
... you think you are sterile . . . . . 3 → GO TO 700
... you think your husband/partner is sterile . . . . 4 → GO TO 700 ☐ (29)

Other reason : _____

_____
(SPECIFY)

609. Do you expect to have a child in the future?

Yes 1
No. . . . . 2 → GO TO 613 ☐ (30)
Don't know. . . . . 8 → GO TO 613

610. How many children do you expect to have (not counting the children you've already had)?

Number: _____ ☐☐ (31-32)

611. In what year would you like your (next) child to be born?

19____ ☐☐ (33-34)

612. Would you like this child to be a boy or a girl?

Boy 1
Girl. . . . . 2 ☐ (35)
Either one. 3

613. Do you think you might have an operation for sterilization at some later date?

Yes . . . . . 1 → GO TO 700
Maybe . . . . . 2 → GO TO 700 ☐ (36)
No. . . . . 3 → GO TO 700
Don't know. . . . . 8 → GO TO 700

xxxx

614. Would you like to have other children in addition to the one you are expecting now?

Yes	1	☐ (37)
No	2 → GO TO 618	
Don't know	8 → GO TO 618	

615. How many children in addition to your present pregnancy do you expect to have?

_____ (number) ☐☐ (38-39)

616. What difference in age would you like to see between the child you are expecting now and the next one?

_____ (number of years difference) ☐ (40)

617. Would you like the child you are expecting now to be a boy or a girl?

Boy	1	☐ (41)
Girl	2	
Either one	3	

618. Do you think you might have an operation for sterilization at some later date?

Yes	1	☐ (42)
Maybe	2	
No	3	
Don't know	8	

SECTION 7 - SHARING HOUSEWORK AND PROFESSIONAL LIFE

INTERVIEWER: SEE MARGIN - Woman living with husband/partner → GO TO 700
- Woman without husband/partner → GO TO 704

700. Would you say that you take part in recreational activities outside the home without your husband/partner ...

... more than once a month 1
... once a month 2
... less than once a month 3
... never 4

☐ (43)

701. In your life as a couple, do you often, sometimes or never have problems in the following areas:

	Often	Sometimes	Never	
a) ... the way you spend money. . . .	1	2	3	☐ (44)
b) ... the way you organize your leisure time	1	2	3	☐ (45)
c) ... sharing housework.	1	2	3	☐ (46)
d) ... your sex life.	1	2	3	☐ (47)

702. Would you say that it is always you, mostly you, equally you and your husband/partner or mainly your husband/partner ...

	Always you	Mostly you	Equally	Mainly partner	
a) ... who does the cooking	1	2	3	4	☐ (48)
b) ... who does the housework	1	2	3	4	☐ (49)

INTERVIEWER: SEE MARGIN, IF RESPONDENT HAD NO LIVE BIRTHS → GO TO 704

703. Would you say that it was always you, mostly you, equally you or your husband/partner or mainly your husband/partner ...

	Always you	Mostly you	Equally	Mainly partner	NA	
a) ... who took care of changing the diapers and feeding the baby	1	2	3	4	9	☐ (50)
b) ... who went shopping for the children's clothes	1	2	3	4	9	☐ (51)
c) ... who supervised the children's schoolwork . .	1	2	3	4	9	☐ (52)

704. Let's go on now and talk about your working experience; have you ever worked on a regular basis for at least six months, including unpaid work in a family business?

Yes. . . . . 1 → GO TO 706
No . . . . . 2 ☐ (53)

705. Are you working now?

Yes. . . . . 1 → GO TO 742
No . . . . . 2 → GO TO 736 ☐ (54)

706. When did you start working on a regular basis? (Do not include work during full-time studies or summer jobs)

_____ (month) 19 _____ (year) ☐☐ (55-56) ☐☐ (57-58)

707. Since then, have you stopped working for a period of at least a year?

Yes. . . . . 1 → GO TO 715
No . . . . . 2 ☐ (59)

708.

708. When you first started working, what type of work did you do and for what type of company?

_____ (type of work) (60-63)

_____ (type of company)

709. At that time, how many hours per week did you normally work?

_____ (number of hours) (64-65)

710. At that time, what was your annual gross salary before taxes and deductions?

$_____ per year (66-68)

711. Since you started working, have you stopped working fairly often for periods of less than one year?

Yes 1
No 2 (69)

712. For this period as a whole, have you worked mostly 30 hours or more a week?

Yes . . . . . 1 → GO TO 714
No 2 (70)

713. Why have you mostly worked less than 30 hours a week?

_____ (71-72)

_____

714. Are you working now?

Yes . . . . . 1 → GO TO 741
No . . . . . 2 → GO TO 732 (73)

xxxx

BLANK PAGE

BLANK PAGE

715. When you first started working, what type of work did you do and for what type of company?

_____ (type of work) (10-13)

_____ (type of company)

716. At that time, how many hours a week did you normally work?

_____ (number of hours) (14-15)

717. At that time, what was your gross annual salary before taxes and deductions?

$_____ per year (16-18)

718. When did you decide to stop working for the first time for a period of a year or more?

_____ (month) 19 _____ (year) (19-22)

719. Why did you decide to stop working at that time?

_____ (23-24)

_____

720. Did you start working again (either full-time or part-time) after this first interruption?

Yes 1

No . . . . . 2 → GO TO 732 (25)

721. When did you start working again?

_____ (month) 19 _____ (year) (26-29)

722. At that time, how many hours per week did you normally work?

_____ (number of hours) (30-31)

723. Did you stop working a second time for a period of a year or more?

Yes 1
No . . . . . 2 → GO TO 741 ☐ (32)

724. When did you stop working this second time?

_____ (month) 19 _____ (year) (33-36)

725. Why did you decide to stop working at that time?

_____ (37-38)
_____

726. Did you start working again (either full-time or part-time) after this second interruption?

Yes 1
No . . . . . 2 → GO TO 732 ☐ (39)

727. When did you start working again?

_____ (month) 19 _____ (year) (40-43)

728. At that time, how many hours per week did you normally work?

_____ (number of hours) (44-45)

729. Since then, have you stopped working for periods of a year or more?

Yes 1
No . . . . . 2 → GO TO 731 ☐ (46)

730.

730. How many times and for how long did you stop working each time?

(number of times) → (length) 1 (length) 2 (length) 3 (length) 4

☐ (47)

☐☐☐☐ (48-51)

731. Are you working now?

Yes. . . . . 1 → GO TO 741

No 2

☐ (52)

732. When you left your last job, were you doing the same type of work as when you started work for the first time?

Yes. . . . . 1 → GO TO 734

No 2

☐ (53)

733. What type of work were you doing when you left your last job and for what type of company?

_____ (type of work)

☐☐☐☐ (54-57)

_____ (type of company)

734. At that time, how many hours per week were you normally working?

_____ (number of hours)

☐☐ (58-59)

735. At that time, what was your gross annual salary before taxes and deductions?

$_____ per year

☐☐☐ (60-62)

736. Do you have a personal income now, excluding family allowance?

Yes. 1

No . . . . . 2 → GO TO 738

☐ (63)

737.

737. How much is this income?

$_____
(specify per week, month or year)

(64-66)

738. Why are you not working now?

_____

(67-68)

739. Do you intend to start working in the future?

Yes 1
No . . . . . 2 → GO TO 749

(69)

740. In how many years?

_____
(number of years)

xxxxxxxxxxxxx
x GO TO 749 x
xxxxxxxxxxxxx

(70-71)

xxxxxxxxxxxx

745. Do you now have some personal income that does not come from your work? (Excluding family allowance)

Yes. 1
No . . . . . 2 → GO TO 747

☐ (15)

746. How much is this additional income?

$_____
(Specify per week, month or year)

☐☐☐ (16-18)

747. Right now, do you intend to work until you are 60?

Yes. . . . . 1 → GO TO 749
No 2

☐ (19)

748. Why do you want to stop sooner?

_____
_____

☐☐ (20-21)

749. In your opinion, is it acceptable for a woman who has a child under three to work outside the home?

Yes. 1
No 2

☐ (22)

750. When a woman who has a child under three decides to work outside the home, which one of the following three child care solutions is the best...

... a babysitter at home 1
... taking the child to a babysitter's home, or. 2
... a daycare center 3

☐ (23)

751. For women, do you think that having young children reduces their work opportunities outside the home a lot, a fair amount, not very much or not at all?

A lot 1
A fair amount. 2
Not very much. 3
Not at all 4

☐ (24)

752. In general, do you believe that the majority of men accept fairly well that their wife (partner) work outside the home? ...

	Yes	No	
a) ... when she has children.	1	2	☐ (25)
b) ... when she has no children	1	2	☐ (26)

SECTION 8 - ECONOMIC ASPECTS OF THE FAMILY

INTERVIEWER ——→ SEE MARGIN

LIVE WITH HUSBAND/PARTNER

800A From a financial standpoint, do you feel that you <u>as a couple</u> have ...

- ... been very successful . . 1
- ... been reasonably successful 2
- ... not been successful . . 3

801A Some couples make very precise plans for the future. In general would you say that you <u>as a couple</u> plan things ...

- ... most of the time 1
- ... occasionally 2
- ... rarely 3
- ... never. 4

802A Suppose your household no longer had its normal income, would your household be able to pay all the regular bills for a month without borrowing money?

- Yes 1
- No. 2

803A Do you or your husband/partner participate in a compulsory pension plan not counting the Canada Pension Plan (or Quebec Plan in Quebec)?

- Yes . . . . 1 → GO TO 804A
- No . . . . 2 → GO TO 805A
- Don't know 8 → GO TO 805A

LIVE WITHOUT HUSBAND/PARTNER

800B From a financial standpoint, do you feel you have ...

- ... been very successful . . 1
- ... been reasonably successful 2
- ... not been successful . . 3

801B Some people make very precise plans for the future. In general, would you say that you plan things ...

- ... most of the time 1
- ... occasionally 2
- ... rarely 3
- ... never. 4

802B Suppose you no longer had the normal income you rely on, would you be able to pay all the regular bills for a month without borrowing money?

- Yes 1
- No. 2

803B Do you participate in a compulsory pension plan not counting the Canada Pension Plan (or Quebec Plan in Quebec)?

- Yes . . . 1 → GO TO 804B
- No . . . 2 → GO TO 805B
- Don't know 8 → GO TO 805B

☐ (27)

☐ (28)

☐ (29)

☐ (30)

Université de Montréal
Centre de sondage

LIVE WITH HUSBAND/PARTNER

804A. Apart this compulsory pension plan, do you as a couple put money aside on a regular basis, from time to time or practically never?

On a regular basis 1
From time to time 2
Practically never 3

GO TO 806

805A. Do you as a couple put money aside including retirement savings plans, on a regular basis, from time to time or practically never?

On a regular basis 1
From time to time 2
Practically never 3

806. Does your husband/partner have live insurance?

Yes 1
No 2

GO TO 807

LIVE WITHOUT HUSBAND/PARTNER

804B. Apart this compulsory pension plan, do you put money aside on a regular basis, from time to time or practically never?

On a regular basis 1
From time to time 2
Practically never 3

GO TO 807

805B. Do you put money aside including retirement savings plans, on a regular basis, from time to time or practically never?

On a regular basis 1
From time to time 2
Practically never 3

GO TO 807

☐ (31)

☐ (32)

☐ (33)

807. Do you have life insurance?

Yes 1
No . . . . . 2 ☐ (34)

808. Do you think that young people who are 18 years or over who are living at home and working should help the family by contributing to household expenses?

Yes 1
No . . . . . 2 ☐ (35)

809. When you were living at home with your parents did you help the family by contributing to household expenses?

Yes 1
No . . . . . 2 ☐ (36)

810. When you retire, do you think you will need financial assistance from your children?

Yes 1
No . . . . . 2 ☐ (37)
Don't know 8

811. When you retire, do you expect to ...

(ONLY ONE ANSWER)

... go and live with one of your children 1
... live in a senior citizens home . . . . . 2 ☐ (38)
... live in your own place 3
... live out your retirement in some other way (SPECIFY):

_____
_____ 4

812. Are your parents still alive?

Yes (one or both). 1
No (both dead) . . . . . 2 → GO TO 815 ☐ (39)
Don't know . . . . . 8 → GO TO 815

813.

813. Do your parents have to count on financial assistance from their children?

Yes 1
No . . . . . 2 ☐ (40)

814. If need be, would you be willing to have your parents live with you for an extended period of time?

Yes 1
No . . . . . 2 ☐ (41)

815. In what type of building are you living in ...

... a single-family house (detached, semi-detached, townhouse, bungalow etc.) 1
... a duplex or triplex 2
... a building with 4 or more apartments 3
... other: _____ (SPECIFY) 4 ☐ (42)

816. Do you or someone in the household own or rent the dwelling you live in?

Owner . . . . . 1 → 817A. What is the approximate value of your dwelling?

$_____

If don't know, check ☐

818. Approximately, how much do you have left to pay on your mortgage?

$_____

If don't know, check ☐

If no mortgage, check ☐

Tenant . . . . . 2 → 817B. How much is your monthly rent (including heating)?

$_____ per month ☐ (44-46)

If don't know, check ☐ (47-49)

(50-52)

0 9 (1-9)

☐ (43)

ATTENTION INTERVIEWER: SEE MARGIN:

- IF LIVING WITH HUSBAND/PARTNER → GO TO 900
- IF NO HUSBAND/PARTNER → GO TO 917

SECTION 9 - CHARACTERISTICS OF CURRENT HUSBAND/PARTNER

900. When was your husband/partner born?

_____ 19 _____
(month) (year)

(10-13)

901. How many children did your husband's/partner's mother have?

_____
(number of children)

(14-15)

902. In total, how many years of education has your husband/partner completed?

_____

(16-17)

903. What is the highest degree, certificate, diploma or grade your husband/partner has obtained?

_____
(SPECIFY)

(18-19)

904. To what ethnic or cultural group did your husband's/partner's male ancestor belong on first coming to North America?

French	01	Ukrainian	07
English	02	Dutch	08
Irish	03	Polish	09
Scottish	04	Jewish	10
German	05	Chinese	11
Italian	06	Greek	12

Other: _____
(SPECIFY)

(20-21)

905. What is the language your husband/partner first learned and still understands?

English	01
French	02
German	03
Italian	04
Ukrainian	05

Other: _____
(SPECIFY)

(22-23)

910. Would you say that it is mainly you, equally you and your husband/partner, mostly your husband/partner or always your husband/partner who makes the decisions about money?

Mainly the woman	1	
Equally shared	2	☐ (33)
Mostly partner	3	
Always partner	4	

911. In the first three years of your relationship, did you at any time feel financially insecure?

Yes	1	☐ (34)
No	2	

912. In the first three years of your relationship, was your husband/partner ever unemployed?

Yes	1	☐ (35)
No	2 → GO TO 914	

913. Were these periods of unemployment particularly trying for you?

Yes	1	☐ (36)
No	2	

914. When you got married or when you started living together, was your standard of living better than, the same as, or worse than that of people you knew in your age group?

Better	1	
The same	2	☐ (37)
Worse	3	

915. And now, is your standard of living better than, the same as, or worse than that of people you know in your age group?

Better	1	
The same	2	☐ (38)
Worse	3	

BLANK PAGE

916. What is your husband's/partner's gross annual income before taxes and deductions?

$_____ per year

(39-41)

917. In all, what is the gross annual income of your family before taxes and deductions including yourself, your husband/partner and your children?

$_____ per year

(42-44)

918. To conclude, did you find that the interview was too long?

Yes 1
No 2

(45)

919. Did you find the subjects discussed interesting?

Yes 1
No 2

(46)

920. How long do you think this interview lasted?

_____
(minutes)

(47-48)

921. Would you rather have been interviewed in person at home?

Yes 1
Perhaps 2
No 3

(49)

→ Exact time now: _____

(50-53)

2

3 3 9
(54-57)

THANK RESPONDENT AND END INTERVIEW