Canadian Studies in Population, Vol. 23(2), 1996, pp.127-145

Differential Effects of Sociodemographic Factors Across Birth Orders Among Canadian Women

Feng Hou
Lewis Odhiambo Omwanda
Department of Sociology
University of Western Ontario

Violet Kaspar
Samuel Noh
Department of Psychiatry
Clarke Institute of Psychiatry
University of Toronto

Abstract

The Cox proportional hazards models were applied to the 1984 Canadian Fertility Survey data to examine the varying associations of selected socioeconomic factors with the likelihood and timing of first, second, third, and fourth births among Canadian women of reproductive ages. The results indicated that women's religiosity, rural residence, marriage cohort, and previous birth intervals were consistently and significantly related to the likelihood and timing of all orders of birth. However, the two prominent determinants of fertility, mother's education and early career experience, were related significantly only to the first two births, and even then the effect of education was non-monotonic: more educated women tended to have their first child earlier than those who were less educated, but were less likely to have a second child. The findings of this study revealed the complexity of the ways in which education and employment influence women's fertility behavior.

Résumé

Les modèles de régression des hasards proportionnels de Cox ont été appliqués aux données de l'Enquête canadienne sur la fécondité de 1984 pour examiner les associations variables de certains facteurs socio-économiques à la vraisemblance et à la survenue dans le temps des premières, secondes, troisièmes et quatrièmes naissances parmi les Canadiennes en âge de procréer. Les résultats indiquent que chez la femme la religion, la résidence rurale, la cohorte de mariage et l'intervalle génésique sont liés de façon constante et significative à la probabilité et au moment de tous les rangs de naissance. Cependant, les deux déterminants dominants de fertilité, l'éducation de la mère et son expérience professionnelle initiale, ne présentaient de liens significatifs que pour les deux premières naissances, et même l'effet de l'éducation s'avère non monotonique; en général, les femmes mieux éduquées avaient leur premier enfant plus tôt que les femmes moins éduquées, mais tendaient à ne pas avoir de second enfant. Les résultats de cette étude révèlent la grande complexité de l'incidence qu'ont l'éducation et l'emploi sur le comportement procréateur de la femme.

Key words: *fertility, birth parity, hazard models*

The non-monotonicity of the path from high to low levels of birth as Canada progressed through its fertility transition has been noted by many demographers (Romaniuc, 1989). Various complementary explanations of this social phenomena have been proposed. A variant of the economic motivation perspective, advanced by Caldwell (1976) holds that there are two fertility regimes, one where individuals would get no economic gain from restricting their fertility, and the other where they would gain. Psychological motivation perspectives generally elaborate on the concept of an underlying distribution of utilities and preferences for children and other goods. For instance, in the value of children theory (Arnold et al., 1975; Fawcett and Arnold, 1973; Hoffman and Hoffman, 1973), children are regarded as having positive and negative values to potential parents. These values combine in various configurations to form a net value which affects people's motivations to have children. Within this framework, people who hold traditional or conservative family values will manifest different reproductive behaviors from those who hold nontraditional or liberal family values.

Along with these possible economic and psychological reasons, some social change dynamics have been identified as germane to the current low fertility in industrialized societies. Among them, Kaufmann (1990) lists a widening of options for women, growing individualism, the decline of normative controls over marriage and parenthood, and the decline of the family as a production and

security unit in the course of modernization and development. These social changes have meant greater employment and leisure opportunities for women; simultaneously, the "contraceptive revolution" has given women more control over not only the timing of all parities of birth, but also of the completed family size.

These theories focus mostly on the identification of determinants of fertility change, along with speculations as to whether past fertility swings may be expected to recur in the future. However, researchers appear to converge on the notion that childbearing in industrialized societies generally stops after the second birth (Ryder, 1979; Balakrishnan et al., 1988; Kravdal, 1992a; Adam, 1991). Indeed, the predominance of the two-child family has made it something of a norm in industrialized, contemporary societies. The proportion of ever-married women in Canada aged 35-39 years, who have given birth to more than two children, declined from 54.7 to 39.5 percent from 1961 to 1981; by 1991 this figure had dropped further to 27.7 percent. This trend reflects a growing gap between second births and third or higher orders, and points to the need to examine the determinants of family size differentials in Canada. Existing models are inadequate for uncovering the particular characteristics of women who have three or more children. This study utilized the 1984 Canadian Fertility Survey data to compare the factors related to first or second births, with those factors associated with third or fourth births among married women aged 18-49 years.

Previous Studies

Women's education and employment patterns are known to be the most consistent predictors of fertility outcomes, although the precise causal mechanisms between them and fertility is not always clear. Generally education tends to be inversely related to family size (Balakrishnan et al., 1979; Grindstaff, 1988), but its influence may take different forms. For instance, education may exert a downward pressure on fertility by raising the age at marriage (Grindstaff et al., 1991), or it may delay the timing of entry into parenthood rather than influence the timing of the second birth (DeWit, 1993). Moreover, the influence of women's education on the timing of the third or subsequent births is often more blurred. A marginally higher likelihood of having a third birth has been found among British women with low educational attainment. In some North European countries, however, a positive relation has been detected between the level of education and the probability of having a third child (Kravdal, 1992a; Hoem and Hoem, 1989), and in the United States the direction of the relation was found to be non-monotonic (Wright, et al. 1988; Wineberg, 1988).

Women's employment status seems to have a more straightforward effect on fertility. One reason for this might be that mothering and working would appear to be incompatible roles: both compete for women's time; at the same time,

child care undermines career-building aspirations of women. Hence, working women can be expected to desire fewer children, if any, than non-working women. Second, increased work opportunities for women, together with improvements in contraceptive technologies have meant both that women can earn more and are able to make career goals which they can attain because childbearing has been brought within the realm of economic calculation.

Despite these seemingly straightforward theoretical connections, investigations of empirical links between employment patterns and parity have yielded inconclusive results. Some North American studies show that women who worked before entry into motherhood tended to delay their first birth, while those who started working after the birth of their first child were more likely to delay their second births (Jones, 1981). Others found that Canadian women who interrupted their careers to begin childbearing soon after marriage were more likely to have shorter intervals between second and third births than between first and second births (Ram and Rahim, 1993). Yet in Britain, Sweden and Norway, the correlation between women's labour force participation patterns and the intensity of third births has been found to be weak (Hoem and Hoem, 1989; Kravdal, 1992b; Wright, et al. 1988).

Some proximate factors also influence the likelihood and timing of respective births. For instance, age at first birth and duration of first birth interval reflect length of exposure to the possibility of pregnancy. Usually an early start of childbearing tends to lead to higher overall fertility, as do short birth intervals (Trussell et al., 1985; Trussell and Menken, 1978). But, recent findings show that there has been considerable weakening of the force of these variables, principally because of the widespread use of contraceptives and other birth control measures to conform to the two-child family model by couples in industrialized societies (Balakrishnan et al., 1988; Wineberg, 1988).

Given social changes in the last several decades, it may not be surprising to find a convergence of the effectsof social and demographic factors on the possibility and timing of the first two births. If the desired number of children is only two in a social context where childbearing is increasingly independent of childrearing, then it is conceivable that there may be a variety of ways in which the influences of women's education and employment may combine with other factors to determine the childbearing patterns of women. Moreover, the effectsof age at first birth and length of the first birth interval on the likelihood and timing of childbearing also may vary with different combinations of women's educational attainment and work patterns. To examine these complex processes, we need to investigate the varying effects of these variables on the likelihood and timing of different birth orders. More importantly, since families with more than two children have become so few in Canada, we can reasonably expect that women with three or four children will be significantly different from others with regard to their distribution among socioeconomic and demographic variables.

On the one hand, childrearing is more affordable for women with higher incomes that are associated with higher levels of education and steady employment. On the other hand, pursuing education and employment may reduce the possibility of women having higher order births because these opportunities may conflict with childbearing and childrearing activities. Furthermore, according to the psychological motivation perspectives, conservative family values are associated with higher fertility; as such, we can expect that such social factors as ethnicity, religiosity, place of residence, or religious affiliation may be more important defining characteristics of women who have more than two children.

Data and Methods

The 1984 Canadian Fertility Survey data set has been widely used in recent Canadian fertility studies; its methodological details are documented in Balakrishnan et al.(1993: 245-311). The survey sample included 5,315 ever-married women aged 18-49 years. The subsample for the current study was restricted to women who married in the period 1949-75 to include only women who would have had adequate time to achieve a fourth birth. Marital disturbances such as divorce and widowhood can substantially change the probability of the birth immediately following the event, so we further constrained our sample to women who were in their first marriage at the time of the survey. Thus, the remaining subsample comprised 1,786 married women, of which 1,662 had first births, 1,465 progressed to second births, 742 to third, and 275 to fourth births.

We used the Cox proportional hazards model for the analysis. This technique has been applied widely in demographic studies of marriage dissolution, mortality, and fertility (Menken, et al., 1981; Balakrishnan et al., 1987; Trussell and Hammerslough, 1983). The Cox model is an extension of the life table technique and, thus, allows the relative likelihood and interval of the selected events to vary with a set of explanatory variables. The major advantage of the hazards model is that it can deal with the problem of censoring, that is, the problem raised by those women who had not given births by the time of the survey but might yet do so in future.

The hazard function is given by $\lambda(t) = \lambda_0(t) \exp(\beta z)$, where β is a vector of parameters and **z** is a row vector of covariates. Hence, the hazard function is the product of the factor λ_0 (t) and another factor exp (βz). The factor λ_0 (t) is an underlying duration- dependent risk for a baseline of referencegroup. The factor exp (βz) depends on covariates and reduces to unity when there are no covariates present. Each exponential of the coefficient β in the model represents the effect of the covariate on the hazard function relative to the reference group. Values larger than unity indicate a higher probability of having a birth compared to the baseline category, while values smaller than unity indicate a lower probability of

giving a birth. Based on the hazard function, the survivorship function can be computed as $S(t;z)=[S_0(t)]^{\exp(\beta z)}$, where $S_0(t)$ is the survivorship function for the reference group (Balakrishnan et al. 1987; Menken et al. 1981).

The model for first births estimates the effectsof the selected covariates on the hazard function of having a first birth after first marriage. For this reason, we excluded women with premarital birth or conception from the estimation of hazard rates for the first birth. These women accounted for less than ten percent of the 1786 cases in the subsample. However, they were included in the models for the remaining birth parities since these models estimate the hazard function of having a birth after the previous birth. Independent variables were chosen based on their theoretical and empirical importance as suggested by previous studies. They consisted of women's education, early employment experience, place of birth, place of residence, ethnicity, religion, church attendance, marriage cohort, and age at first marriage. Age at first birth and length of previous birth intervals also were included in analyses for second, third and fourth births. Parsimony was maintained in each model by stepwise selection using BMDP software. Estimation was done using the maximum-likelihood ratio statistic as criterion. These models enabled us to evaluate the possible changes of the effects of socioeconomic and demographic factors on different birth parities.

A basic assumption of the Cox model is the proportionality of hazard rates for different strata of each independent variable. The conventional test is to plot the observed log(-log) survival curves of all categories of an independent variable against length of time. The assumption is met if the plotted lines are parallel. All the survival curves for our independent variables were approximately parallel, indicating that the assumption of proportionality of the hazard rates in our analyses was reasonable.

Findings

First Births. Table 1 presents sample proportions and the exponentials of coefficients(exp (βz)) from the Cox proportional hazards models for first and second births. Among the significant factors in the model for first births, women with higher education tended to delay having a child after marriage. Those with grade eleven or less education had a 16.3 percent higher likelihood of having a first child than college educated women. As discussed above, the effect of education on declining fertility is believed to work through postponement of first birth. From our analysis, it is clear that this postponement occurred partly after marriage. Women who worked before marriage and immediately after marriage were more likely to postpone their first birth after marriage, compared with those who did not work before marriage.

Table 1. Proportional Hazard Models for First and Second Births, Canada

Covariate	First Births		Second Births	
	Sample Proportion	Hazard Coefficient	Sample Proportion	Hazard Coefficient
Education				
≤11 grade	.354	1.163*	.396	0.784***
12-13	.354	1.051	.346	0.817**
14+	.292	1.000	.258	1.000
Time of First Work				
Before marriage	.686	0.547***	.641	0.850**
Bet. mar & F.b	.089	0.353***	.065	0.864
Other	.225	1.000	.294	1.000
Place of Residence				
City	.592	1.000	.560	1.000
Town	.314	1.074	.340	1.285***
Farm	.094	1.264*	.100	1.587***
Place of birth				
Canadian	.825		.836	
Foreign	.175		.164	
Ethnicity				
European origin	.862		.856	
Other	.138		.144	
Religion				
Catholic	.497		.490	
Protestant	.369		.379	
Other	.144		.131	
Church attendance				
Weekly	.371	1.119**	.368	1.1954**
Rarely or never	.629	1.000	.632	1.000
Marriage cohort				
49-59	.154	1.354***	.159	1.299**
60-64	.183	1.278**	.187	1.154*
65-69	.289	1.163*	.286	0.963
70-74	.374	1.000	.368	1.000
Age at first marriage				
≤19	.175	1.252*	.217	
20-25	.595	1.070	.325	
>25	.230	1.000	.458	
Age at first birth				
≤19			.181	
20-25			.519	
>25			.300	
First birth interval				
≤8 months			.194	0.891
9-21			.345	1.000
22+			.461	0.770***
Maximum likelihood X^2		261.7***		118.8***
Df		12		12
Sample size		1786		1662

Note: * p<.05, ** p<.01, *** p<.001. Baseline group: grade 14+ education, not worked before first birth, city residence, foreign born, European origin, other religion, weekly church attendance, married 1970-74, age at first marriage >25. Baseline group for first birth interval is 9-21 months.

Those living in rural areas had a 26.4 percent higher likelihood of having a first birth than those living in urban areas. The degree of a woman's religiosity also had a significant association with first birth: those who attended church at least once a week had earlier first births than those who rarely or never attended church. Meanwhile, place of birth, ethnicity, and religious affiliation had no significant association with first births.

The hazard coefficients of various marriage cohorts reflect a process of increasing postponement of first births from the 1950s to the 1970s, with the 1949-59 marriage cohort having the shortest first birth intervals while women who married in the period 1970-74 were more likely to postpone their first births longest. Similarly, women who got married before age 20 tended to begin childbearing sooner after marriage than those who married at age 25 or older.

Second Births. As indicated by the model for second births in Table 1, there were some striking similarities between the models for first and second births: the effectsof early work experience, place of residence, religion, and marriage cohort also were significant as in the first birth parity. But there were also some importantdifferences.

The effectof education on the probability of second births was in the opposite direction to that of first births. Compared to women with 14 years or more of schooling, both those with grade 11 education or less and those with grades 12 and 13 had longer second birth intervals. This result is consistent with the findings of Rao and Balakrishnan (1989). A tentative explanation may be that the length time these women spent in the educational system implied postponement of the first births so that once these highly educated women completed their education, they tended to reduce their birth intervals in order to achieve their desired family size. Note also that women who worked before marriage had longer intervals for both first and second births. The impacts of women's education and early employment experiences appear to have operated in different directions. Perhaps because educational attainment is relatively permanent once it has been achieved, some women may have delayed their first births in order to complete their education; then they shortened the period to the second births to minimize the time spent outside the labour force and, perhaps, to "catch up" in achieving the desired number of children. On the other hand, early work interruption may have more lasting effectson later career prospects. Hence, working women may have spaced out their birth intervals in order to minimize interruptions to their early careers.

Both age at first marriage and age at first birth had no significant effects on second birth intervals. But the effectof first birth interval on the second was highly significant: a short first birth interval tended to be followed by a short second birth interval and vice versa, with women who delayed their first births tending to delay their second births as well. Women with first birth intervals

longer than 22 months had a much lower likelihood of having a second birth than those with first birth intervals of 9-21 months.

Third Births. As the model for third births in Table 2 shows, unlike the pattern in first and second birth parities, the effect of education became insignificant. Early work status had no significant effect but place of residence and church attendance were significant social predictors: women living in farms were more likely to have a third child than those living in urban settings, while women who attended church every week were 34.3 percent more likely to have a third birth than their counterparts who attended church only rarely or never.

The impact of marriage cohort remained important: those who married between 1949- 59 had a 94.5 percent higher likelihood of having a third birth than those in the 1970-74 marriage cohort; however, women who married in the period spanning 1965-69 were less likely than those in the 1970-74 marriage cohort to have a third birth. This pattern of finding suggests that, on average, women who married between 1965 and 1969 postponed their third births longer than those who married in the decade after, ceteris paribus. The explanation for this is not clear. The third birth interval was highly associated with the length of previous birth intervals: women with both longer first and second birth intervals were less likely to have a third child than those whose first and second birth intervals were only 9-21 months. This may simply suggest that those women who prepared to have a large family shortened the intervals between their early births.

To illustrate, survival curves for the baseline (or reference)group, high hazard and low hazard groups are shown in figure 1. The proportions of women who had third births among the baseline group are given by $1-S_0(t)$; those of the other groups are given by $1-S_0(t)^x$, where x is relative risk factor exp (βz). The factor is 3.884 for the high hazard group and 0.227 for the low hazard group based on the coefficientsof the hazards model. Thus, the proportion of women with third births could be as high as 95.2 percent for the high hazard group and as low as 19.4 percent for the low hazard group five years after the second birth.

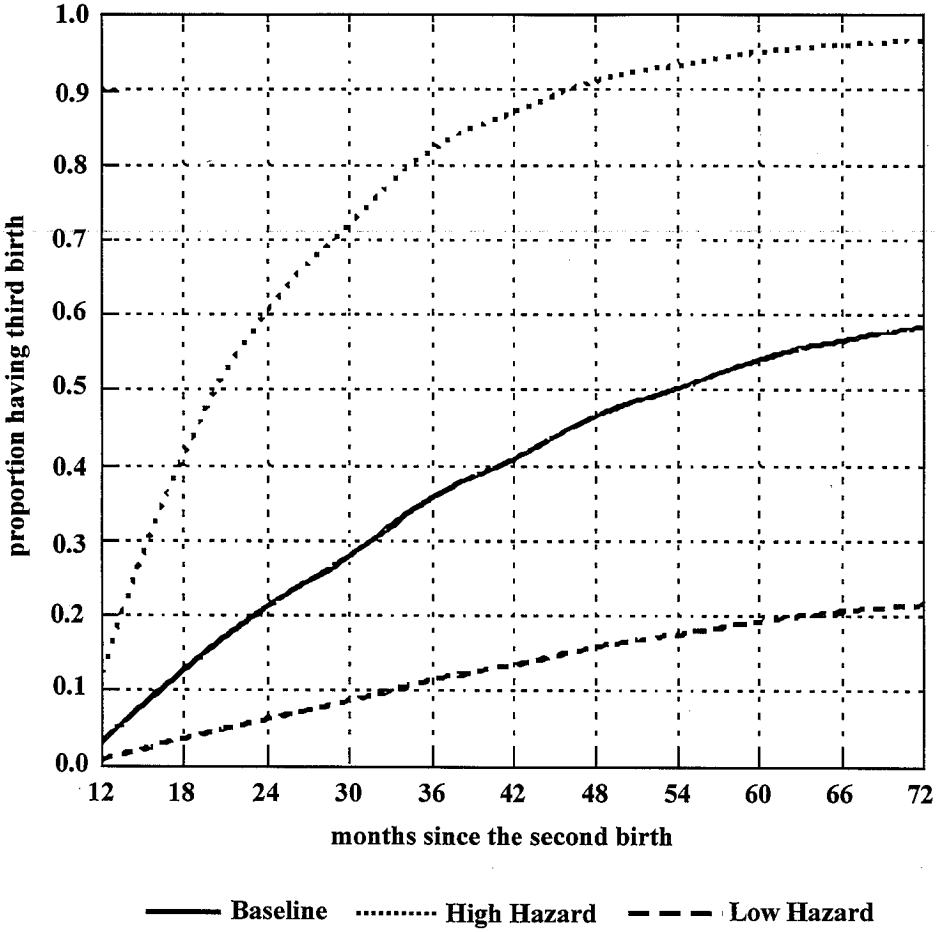
Fourth Births. As shown in the model for fourth births, the impacts of place of residence and church attendance remained important as in the previous models. The effect of religion on the first three birth intervals was not significant, but it was on the fourth: women with Protestant religious affiliation were less likely to have a fourth birth than those with other religions, although some studies have detected a convergence of the effectsof religious affiliation on fertility since the 1970s (Balakrishnan and Chen, 1990). We may not have captured this trend because of the different time period covered by our study.

Table 2. Proportional Hazard Models for Third and Fourth Births,Canada

Covariate	Third Births		Fourth Births	
	Sample Proportion	Hazard Coefficient	Sample Proportion	Hazard Coefficient
Education				
≤11 grade	.399		.472	
12-13	.341		.294	
14+	.260		.234	
Time of First Work				
Before marriage	.629		.594	
Bet. Mar & F.b	.065		.049	
other	.306		.357	
Place of Residence				
City	.543	1.000	.485	1.000
Town	.349	1.108	.371	1.445**
Farm	.108	1.449**	.144	1.868***
Place of birth				
Canadian	.832		.849	
Foreign	.168		.151	
Ethnicity				
European origin	.858		.852	
Other	.142		.148	
Religion				
Catholic	.478		.491	0.906
Protestant	.388		.373	0.619*
Other	.134		.138	1.000
Church attendance				
Weekly	.382	1.343***	.449	1.248*
Rarely or never	.618	1.000	.551	1.000
Marriage cohort				
1949-59	.168	1.945***	.251	2.093***
1960-64	.191	1.252*	.228	1.195
1965-69	.287	0.960	.259	1.053
1970-74	.354	1.000	.262	1.000
Age at first marriage				
≤19	.227		.241	
20-25	.323		.306	
>25	.450		.453	
Age at first birth				
≤19	.197		.233	1.565*
20-25	.535		.582	1.411
>25	.268		.185	1.000
First birth interval				
≤8 months	.206	1.026	.249	1.535**
9-21	.368	1.000	.467	1.000
22+	.426	0.553***	.287	0.999
Second birth interval				
≤21 months	.302	1.000	.430	1.000
22+	.698	0.502***	.570	0.618***
Third birth interval				
≤21 months			.280	1.000
22+			.720	0.573***
Maximum likelihood X^2		298.4***		153.0***
Df		9		14
Sample size		1465		742

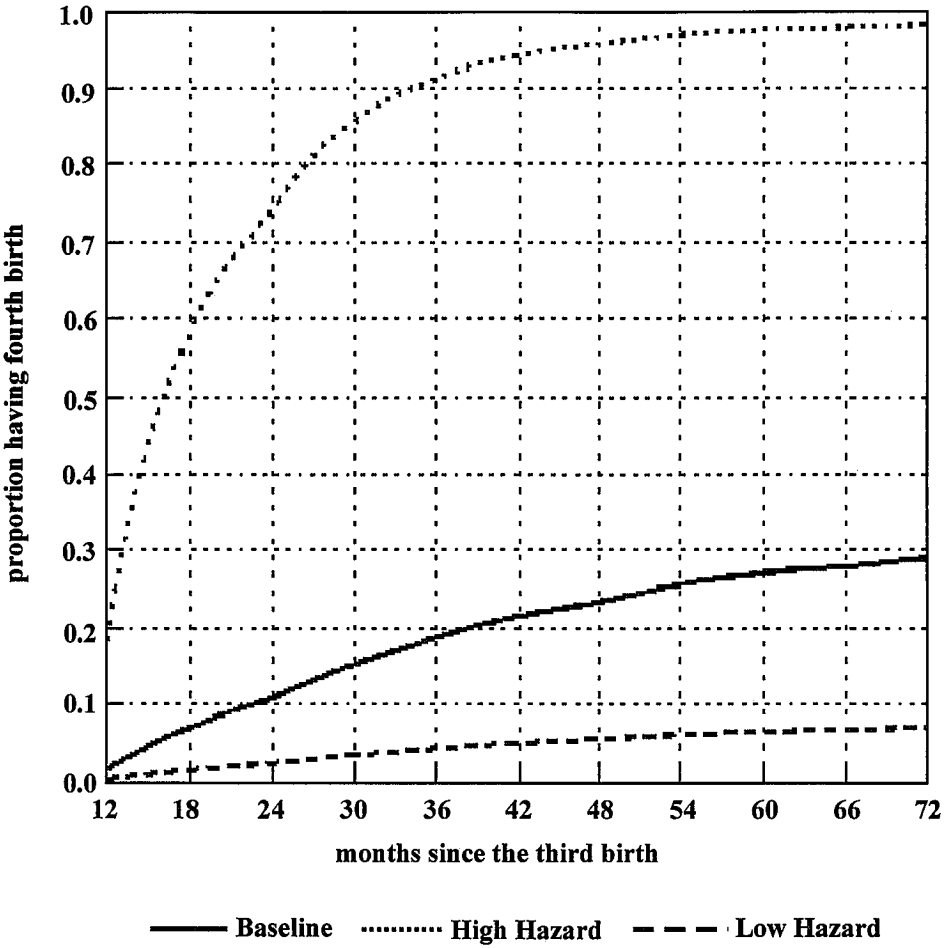
Note: see Table 1 note. Baseline groups for second and third birth intervals are ≤21 months.

Figure 1 Proportions having Third Birth by Birth Interval for Reference and Comparision Groups



Notes:
(A) Reference group: Urban residence, Rare church attendance, Married 1970-74, First birth interval 9-21 months, Second birth interval ≤ 21 months.
(B) High hazard group: Farm residence, Weekly church attendance, Married 1949-59, First birth interval 19-21 months, Second birth interval ≤ 21 months.
(C) Low hazard group: Urban residence, Rare church attendance, Married 1970-74, First birth interval ≥ 22 months, Second birth interval ≥ 22 months.

Figure 2 Proportions having Fourth Birth by Birth Interval for Reference and Comparison Groups



Notes:
(A) Reference group: Urban residence, Other religion, Rare church attendance, Married 1970-74,First birth interval 9-21 months, Second birth interval ≤ 21 months, Third birth interval ≤ 21 months.
(B) High hazard group: Farm residence, Other religion, Weekly church attendance, Married 1949-59, Age at first birth ≤ 19, First birth interval 9-21 months, Second birth interval ≤ 21 months, Third birth interval ≤ 21 months.
(C) Low hazard group: Urban residence, Protestant, Rare church attendance, Married 1970-74, Age at first birth .> 25, First birth interval ≥ 22 months, Second birth interval ≥ 22 months, Third birth interval ≥ 22 months.

Among marriage cohorts, only those married between 1949-59 had a significantly higher likelihood of having a fourth birth than the marriage cohort of 1970-74. This finding suggests that the length of the interval between third and fourth births declined dramatically at some point but began to stabilize with the marriage cohort of 1960-64. The length of the fourth birth interval is consistently associated with the intervals of previous births: the longer the previous birth interval, the lower was the likelihood of having a fourth child.

Analysis of sample proportions of women with previous birth intervals shows that for those who already had their third child, the average length of birth intervals increased gradually from lower to higher birth parities. Less than 46.1 percent of the women had their first birth intervals longer than 22 months after marriage, a proportion which increased to 72 percent for the third birth interval.

Age at first birth, which was not significantly associated with second and third births, was related rather to the probability of having a fourth birth: generally, having a first birth at a young age raised the likelihood of having a fourth birth, with women who had their first births at age 19 years or less facing a 56.5 percent higher likelihood of having a fourth birth than those who had their first births at age 25 years or older. As suggested by Hoem and Hoem (1989), an early start of family building may be a selective process, signalling high childbearing potential. It is noteworthy, however, that the effect of age at first marriage on the likelihood and timing of fourth birth was not significant. It seems that early marriage, unlike early first birth, does not signify an intention to have a large family.

Figure 2 highlights differences in the proportions of women who had fourth births among various hazard groups. The relative risk factor is 11.718 for the high hazard group and 0.219 for the low hazard group, based on the coefficients of the corresponding hazards model. Five years after a third birth, 97.5 percent of the women had a fourth birth among the high hazard group compared to only 6.7 percent of the women in the low hazard group.

Discussion and Conclusions

Some socioeconomic and demographic factors, such as education, early work experience, religion, age at first marriage, and age at first birth, are differentially associated with different orders of birth. On the other hand, women's religiosity, place of residence, marriage cohort, and previous birth intervals all had a consistent and significant relation with the likelihood and timing of all births in our study. The factors that remained important as determinants of third and fourth births appeared to be those associated with women's childbearing intentions; moreover, these intentions were basically independent of women's

employment experiences and educational attainment. Adherence to traditional values seemed, in the main, to be the underlying forces of these intentions.

In their study of the relations between religiosity, nuptiality and fertility, Balakrishnan and Chen (1990) suggested that high religiosity, as assessed by the frequency of church attendance, represents a traditional and conservative belief system which may persist across socioeconomic, religious, and cultural groups. If more religious women are more traditional in their views, then we might expect that they would be less likely to accept liberal-orientated behaviors such as premarital cohabitation, divorce, or contraceptive use and may, therefore, be more likely to hold larger family-size norms. Our results suggested further that place of residence also may distribute populations along a liberal-conservative plane. Hence, rural-urban differencesare manifested not just in population size, density, heterogeneity, and economic structure, but also in way of life. Urbanism is characterizedby its unconventionality, and urban residents are more likely than rural residents to behave in ways that diverge from traditional norms (Fischer, 1975). Fertility behavior may reflect one aspect of these differences.

The effect of marriage cohort may simply mirror the sequence of declining numbers of children in average Canadian families. The youngest marriage cohort (1970-74) was different from the next youngest cohort of 1965-69 only on the first birth, whereas it was different from the 1960-64 cohort on first, second, and third births. The oldest cohort of 1949-59 differed from the youngest cohort on all births. In other words, it was common for those who married before the mid-1960s to have three or more children. Meanwhile, those who married between 1965-69 had no significant differencein the likelihood and timing of having the second birth from those who married between 1970-1974, although the former had a higher possibility and shorter interval of having the first birth than the latter. It is possible that the two-child family norm began to stabilize with those married after the mid-1960s. The above differences among various marriage cohorts should not be interpreted as results of variations in exposure to reproduction. Naturally, the older the marriage cohort, the greater the exposure, and consequently the higher the propensity to have a larger number of children. However, with the exception of the 1970-74, and possibly the 1965-69 marriage cohorts, by the time of the survey, women in other cohorts should all have had enough time to have four births if they desired to do so. Therefore, these findings may indicate that fertility variations among Canadian women have changed from a timing and intensity regime geared toward achievement of large families to that achieving only one or two births.

As measures of the start of a woman's reproductive life, the effects of age at marriage and age at first birth on fertility behavior have not before been adequately specified by demographers. Our study indicates that, although an earlier marriage may imply the possibility of earlier initiation of childbearing, those married before 20 years of age did not necessarily achieve higher levels of

lifetime fertility than those who married at age 25 years or older. In fact, age at first birth did not have significant effectson the timing of the second or third births. However, the younger a woman was at the birth of her first child, the more likely she was to have a fourth birth. Since knowledge and use of effective contraception are high in Canada, the likelihood of unwanted childbearing has been substantially minimized. A long period of exposure to the likelihood of conception is no longer necessarily associated with higher actual fertility. Also, the desired family size can be achieved any time during the reproductive life of a woman. As a result, an early start of childbearing merely signals a biological possibility of high fertility; it will be related to high subsequent fertility only if a large family size was initially intended, a situation which was more likely to occur at the fourth birth parity for the women in our study.

Education and early career experience are of little consequence in the timing and intensity of third or fourth births. The immediate explanation for this may be that these socioeconomic factors no longer have a strong influence on total fertility in Canada. As more women achieve higher education, and as their labour force participation rates rise, the dominant fertility norms converge among most women with these socioeconomic characteristics. As shown in our analysis, higher educational attainment significantly delays the first birth, but the effects of education are in the opposite direction on the second birth. Clearly, most women delay the start of childbearing to pursue higher education which for many is not completed until their mid-20s. Once their formal education is completed, some of these women quicken the pace of the second birth to achieve the two-child family. Employment experience before marriage and first birth has a delaying effecton the timing of first and second births, perhaps to ensure a longer work experience before starting a family and to minimize risks associated with interruptions in women's early careers following the first maternity.

This study supports earlier findings that higher parity birth in contemporary western countries is associated with familial norms but not with socioeconomic factors. Overall, our findings suggest that since the 1950's, fertility differentials among Canadian women fall along the distinction between traditional and nontraditional social values. High parity births reflect conventional familial attitudes and values. It is individual women's general attitudes toward having children that determine their lifetime fertility. Socioeconomic characteristics, such as education, employment, ethnicity, and immigration status have no direct effects on the number of births. In the last few decades, economic calculi were related only to the first two births. Higher order births were almost entirely accounted for by traditional familial norms, which still endure among some Canadian families.

Our analytic approach was differentfrom that used in general fertility theories, which tend to focus on the overall effects of socioeconomic and demographic forces on the historical decline in fertility. These theories aim to establish

general patterns of relations among social phenomena based on large scale social changes over a long period of time. However, for the study of fertility differentials in a relatively stable period, a much more practical approach would be to go beyond the overall effects of socioeconomic and demographic factors on fertility and to identify parity-specific determinants. This represents both an opportunity and a challenge, as the nature of the interrelations among fertility behavior and sociodemographic factors, such as education and employment, tend to be complex and non-linear over the life course within a society where the two-child family has been established as a norm.

Footnotes:

1. Calculated from the 1961 Census of Canada, Cat. 98-507; 1971 Census of Canada, Cat. 92-718; 1981 Census of Canada, Cat. 93-321.

2. See Balakrishnan et al. (1987) for a detailed description of the statistical procedures.

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Acknowledgments:

We gratefully acknowledge the support of Prof. T.R. Balakrishnan in the course of this study. We would also like to thank Dr. Wayne W. McVey and two reviewers for helpful comments on an earlier draft of this paper.

Received, March 1995; Revised, February 1997