

## MOTHER TONGUE AND MARRIAGE: THE FRENCH AND ENGLISH IN CANADA

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*Résumé* — L'intermariage linguistique a des conséquences importantes et pour les groupes et pour les individus que la question touche. Utilisant des données au niveau individuel, cette étude examine le mariage en dedans et entre les groupes dont la langue maternelle est soit l'anglais ou le français. Les caractéristiques telles que l'éducation, l'origine ethnique et l'aptitude en langue officielle se sont révélées comme facteurs importants mais le contexte social ou démographique était aussi important. Un effet assez considérable d'aptitude linguistique a été constaté mais l'ampleur variait selon le contexte démographique.

*Abstract* — Linguistic intermarriage has important consequences both for the groups and individuals concerned. This paper examines marriage within and between the English and French mother tongue groups using individual level data. Characteristics such as education, ethnic origin and official language ability were found to be significant factors but the social or demographic context was also important. A sizable effect of language ability was found but the magnitude varied with the demographic context.

*Key Words* — linguistic intermarriage, mother tongue, official language ability

### *Introduction*

Canada has been a country of two major languages for several centuries but concerns have been raised about the future of the French language population given the recent low birth rate in Quebec and the tendency for immigrants to acquire English rather than French (see Henripin, 1977 and for an historical review of linguistic trends, Beaujot and McQuillan, 1982). Between 1971 and 1981, the French mother tongue population grew more slowly than either the English or the heterogeneous "other" mother tongue groups (Statistics Canada, 1985).<sup>1</sup> In such a context, intermarriage between the French and English language groups becomes an important issue and this paper examines this phenomena to see what factors affect the probability of linguistic endogamy or exogamy.<sup>2</sup>

Castonguay (1979, 1982) has examined data from recent censuses and reported that rates of exogamy have increased for the French language population outside Quebec. In areas where French is strong, mixed marriages appear to be an important factor contributing to language shift (adoption of a language in the home that is different from one's mother tongue) while elsewhere, anglicisation is generally at a high level so that the causal relation is less clear. Other research has demonstrated the age patterns of language shift (Castonguay, 1976; de Vries, 1974) and these patterns suggest the importance of marriage, along with education and entry to the labour force. Gordon, in his study of assimilation (1964), argues that when marital assimilation occurs on a large scale then "the minority group loses its ethnic identity in the larger host or core society, and identificational assimilation takes place." A Canadian study by Goldstein and Segall (1985) provides some empirical support for Gordon's view: ethnic identity was found to be weaker among those from mixed ethnic backgrounds. Intermarriage can, then, have important consequences both for the groups involved and individuals in such marriages and their children (see, for example, Castonguay and Veltman, 1980).

Research in Canada and the United States has generally focussed on documenting rates of exogamy for different language or ethnic/racial groups or provided an analysis of intermarriage rates rather than an individual level analysis (see, for example, Alba and Golden, 1986; Blau, Becker and Fitzpatrick, 1984; Gurak and Fitzpatrick, 1982). A recent individual level study to estimate the probability of ethnic endogamy in the United States is that of Stevens and Swicegood (1987) based on the 1976 Survey of Income and Education. In their study they used both individual level variables and variables such as group size. In the analysis undertaken here, the effects of both social

context and individual level characteristics on linguistic endogamy will be assessed.

*Marriage Within or Between Language Groups*

In general, most marriages in western society take place between individuals who are the same or similar on a variety of characteristics — race, religion, education, socioeconomic status and language. Becker in his application of economic theory to marriage (1976, 1981) provides a theoretical basis for a variety of empirical patterns regarding marriage including the sharing of traits by spouses. Products of marriage include children, meals, companionship and sex, although these products need not be exclusively produced within marriage. Becker argues that when traits are complements then the marriage of likes is optimal: a shared interest in modern ballet, for example, may result in greater enjoyment of such an activity by both partners. Similarity with respect to certain traits may increase the productivity or rewards from marriage. If traits are substitutes, then the mating of unlikes is optimal. Since the marriage of likes predominates, Becker argues that most traits are complements and that mismatching of traits is associated with a higher probability of divorce (Becker *et al.*, 1977).

Marriage can be viewed as a search activity (Keeley, 1977). In general, individuals may seek mates who share the same mother tongue. Mother tongue provides an indicator of ethnicity, albeit not a perfect one and individuals tend to marry within their ethnic group (Carter and Glick, 1976; Kalbach and McVey, 1979). Group size and segregation have been found to be important factors in intermarriage (see, for example, Alba and Golden, 1986; Blau *et al.*, 1984; Stevens and Swicegood, 1987) and these can be interpreted from a search perspective. Both segregation and group size concern the opportunities for endogamy. The smaller the group, the more difficult it may be to find a suitable mate since the available pool of similar individuals is smaller. Segregation will tend to increase endogamy by limiting opportunities for interaction with other groups and providing a concentration of potential spouses. In the case of small group sizes, the costs of search for a spouse from within one's language group will be high, raising the probability of marrying outside the group. Segregation will operate in the other direction, lowering the cost of search for a spouse from one's group and raising the probability of endogamy.

Overall, most English and French mother tongue Canadians marry a spouse of the same mother tongue but the extent of linguistic endogamy varies with the linguistic composition across the country. In the province of Quebec, where the

French mother tongue population is concentrated, linguistic intermarriage is low for the French mother tongue population with only about five per cent of married French mother tongue persons having a spouse of a different mother tongue. Outside Quebec, where the francophones are in a minority, about one third of married French mother tongue persons have non-French mother tongue spouses. In general, rates of linguistic exogamy by province for the French mother tongue population increase with greater distance from Quebec (Castonguay, 1979). For the English mother tongue population, the opposite pattern to that of the French population is evident. Outside Quebec, where the opportunities for meeting other English mother tongue people are great, there is little linguistic exogamy (less than about 10 per cent of married English mother tongue persons have non-English spouses). In Quebec, however, about one third of married English mother tongue persons have non-English spouses.

Quebec provides not only a concentration of the French mother tongue population; it also represents a unique environment for francophones since French is the language of the province and cultural integrity is strongest there. For French mother tongue persons born in Quebec, it is expected that the cultural ties engendered there will raise the probability of marriage within the French mother tongue group *cet. par.* For English mother tongue persons, having been born in Quebec, may provide an appreciation of francophone culture which may increase the probability of linguistic intermarriage.

Turning next to individual characteristics, the probability of endogamy is expected to be a function of age, education, language ability and ethnic origin. Younger persons may be more tolerant of other groups and more exposed to other groups than older persons were when young, due to higher levels of urbanization, greater involvement in higher education and due to the homogenizing effects of the media on culture. Lambert and Curtis (1985) have found age effects for the opposition to intergroup marriage with older persons reporting greater opposition to interracial and interreligious marriages.<sup>3</sup>

Education could be expected to influence the likelihood of linguistic intermarriage in several ways. More highly educated persons are likely to have more extensive contact with other groups. Higher education generally provides a more mixed environment with respect to language and culture than individuals may find in their neighbourhood. Opportunities for intermarriage may be greater for those with more education. Education is also likely to affect individual attitudes and perceptions of other groups (Bogardus, 1968) and this greater tolerance may be reflected in a higher likelihood of intermarriage. On the other hand, more educated persons may be more informed about the marriage market and their search activity may be more productive (see Keeley, 1977). More educated persons are likely to have a higher involvement in voluntary associations and

such associations often provide opportunities for meeting members of the opposite sex with similar backgrounds and interests. If language traits are complements in the sense discussed earlier, then optimal sorting implies marriage within the language group; and if more educated persons are more efficient researchers in the marriage market, then they will be more likely to select a mate from the same language group.<sup>4</sup> Since the search and tolerance aspects have opposite predictions, the net effect of education on the probability of intermarriage is unclear.

Language ability may affect the probability of linguistic intermarriage. Competence in the other official language (e.g., for French mother tongue persons, the ability to speak English), may increase the likelihood of linguistic intermarriage. Ethnic origin may also affect the probability of intermarriage. Castonguay (1981) has drawn attention to what he terms "retroamy": the propensity of French ethnic origin persons of English mother tongue to marry spouses of French origin and French mother tongue. Individuals of French ethnic origin are expected to marry endogamously (in terms of language group) if they are of French mother tongue. Persons of English mother tongue who report French ethnic origins are expected to have a higher probability of marrying a person of French mother tongue based on Castonguay's finding. Finally, the probabilities of endogamy may differ for men and women: women, for example, may be subject to greater family pressure in the choice of a spouse.<sup>5</sup>

### *Data and Methods*

The 1981 Canadian census (household file) was used in the analysis and cases were selected where one or both of the spouses were Canadian born. This was to maximize the chances of only including marriages taking place in Canada to reflect the Canadian marriage market. Marriages were then classified in terms of the mother tongue of spouses and those selected for analysis were endogamous (English-English or French-French mother tongue) or exogamous (English-French mother tongue). There are 28,276 English mother tongue husbands, 28,205 English mother tongue wives, 13,921 French husbands and 13,992 French wives.<sup>6</sup>

The probability of marrying within one's mother tongue is estimated separately for English mother tongue men, English mother tongue women, French mother tongue men and French mother tongue women. This allows for effects of variables on the probability of endogamy to differ by gender and language group. Opposite effects of the per cent French are expected, for

example, on the probability of linguistic endogamy for French compared with English mother tongue persons.<sup>7</sup> Variables used in the analysis are defined below.

PCTFR — if the person lives in a census metropolitan area (CMA) this is the per cent French mother tongue population in the CMA, otherwise it is the per cent French mother tongue in the province.

This variable captures the per cent French in the current place of residence. It would be preferable to use the per cent French in the place of residence prior to marriage, but this is not available. However, one could think of the per cent French in the current place of residence as representing a characteristic of the current marriage market. Marriages can (although at some financial and emotional cost) be dissolved and individuals can remarry and the per cent French in the area indicates the opportunity for marriage to a French mother tongue person. A measure of segregation is not available.

|            |                                                                                                                                                 |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| YRS EDUC:  | years of education                                                                                                                              |
| AGE:       | age in years                                                                                                                                    |
| QUE BORN:  | born in the province of Quebec coded 1, 0 otherwise                                                                                             |
| FR ETHN:   | dichotomous variable coded 1 if French ethnic origin (either as a single response or in combination with another ethnic origin) and 0 otherwise |
| FR ABIL:   | for English mother tongue persons, the ability to speak French coded 1, 0 otherwise                                                             |
| ENGL ABIL: | For French mother tongue persons, the ability to speak English coded 1, 0 otherwise                                                             |
| ENDOG:     | coded 1 if married to a person of the same mother tongue, 0 otherwise.                                                                          |

Descriptive statistics are presented in Table 1. The probability of an endogamous marriage was estimated using the linear probability model (OLS) and by probit (see Hanushek and Jackson, 1977).<sup>9</sup> The probit model assumes a cumulative normal distribution for the underlying probability and the maximum likelihood estimates (MLE) are not very meaningful since probit is not a linear function. The sign of the estimates indicates the direction of effect on the probability of endogamy and the magnitude of effect of a change in an independent variable on the probability of endogamy depends on where the function is evaluated. Partial derivatives are reported with the function evaluated at mean

TABLE 1. DESCRIPTIVE STATISTICS

|          | ENGLISH MOTHER TONGUE |          |       |          | FRENCH MOTHER TONGUE |          |       |          |
|----------|-----------------------|----------|-------|----------|----------------------|----------|-------|----------|
|          | HUSBANDS              |          | WIVES |          | HUSBANDS             |          | WIVES |          |
|          | mean                  | std.dev. | mean  | std.dev. | mean                 | std.dev. | mean  | std.dev. |
| PCTFR    | 8.17                  | 15.99    | 8.06  | 15.80    | 67.66                | 25.95    | 67.59 | 25.96    |
| YRS EDUC | 11.58                 | 3.37     | 11.65 | 2.86     | 10.38                | 3.78     | 10.23 | 3.26     |
| FR ETHN  | 0.07                  | 0.25     | 0.07  | 0.25     | 0.96                 | 0.20     | 0.97  | 0.17     |
| AGE      | 44.06                 | 15.56    | 41.32 | 15.18    | 43.09                | 14.59    | 40.65 | 14.21    |
| FR ABIL  | 0.08                  | 0.27     | 0.07  | 0.26     | —                    | —        | —     | —        |
| QUE BORN | 0.06                  | 0.23     | 0.08  | 0.23     | 0.84                 | 0.36     | 0.84  | 0.37     |
| ENG ABIL | —                     | —        | —     | —        | 0.51                 | 0.50     | 0.38  | 0.48     |
| ENDOG    | 0.96                  | 0.20     | 0.96  | 0.19     | 0.92                 | 0.27     | 0.92  | 0.28     |

## NOTE:

A"—" indicates that this variable was not used in the analysis for this sub-sample.

levels for age and education and values of the per cent French and dichotomous variables as indicated in the note on Table 2. (See Hanushek and Jackson, 1977 for details of obtaining partial derivatives).

*Results*

For English mother tongue husbands and wives, the per cent French has a negative effect on the probability of endogamy and for French mother tongue persons, there is a positive effect of per cent French on the probability of endogamy. Such findings are consistent with what one would expect based on previous research concerning group size. The differences between the English and French in the effect of per cent French (holding gender constant) on the probability of linguistic endogamy are significant. The effect of per cent French does not differ by gender, holding language group constant. Ethnic origin also operates in a way one would expect: for French mother tongue persons, French ethnic origin raises the probability of marrying a person of French mother tongue and as reported by Castonguay (although not in a multivariate framework). French ethnic origin for those of English mother tongue reduces the probability of marrying an English mother tongue person.

Ability to speak the official language other than one's mother tongue lowers the probability of endogamy for French and English. No significant differences

TABLE 2. ESTIMATION OF THE PROBABILITY  
OF LINGUISTIC ENDOGAMY

|                                   | OLS ESTIMATES |       | PROBIT ESTIMATES |       |                |
|-----------------------------------|---------------|-------|------------------|-------|----------------|
|                                   | b             | t     | MLE              | t     | partial deriv. |
| A. ENGLISH MOTHER TONGUE HUSBANDS |               |       |                  |       |                |
| PCTFR                             | -0.0028       | -32.1 | -0.0162          | -19.8 | -0.0058        |
| YRS EDUC                          | 0.0011        | 3.2   | 0.0091           | 1.9   | 0.0033         |
| FR ETHN                           | -0.0814       | -18.3 | -0.5433          | -12.7 | -0.2091        |
| AGE                               | 0.0003        | 3.9   | 0.0045           | 4.2   | 0.0016         |
| FR ABIL                           | -0.1415       | -28.9 | -0.7989          | -17.9 | -0.2190        |
| QUE BORN                          | 0.0162        | 2.7   | 0.2057           | 3.4   | 0.0746         |
| CONSTANT                          | 0.9711        | 158.0 | 1.8571           | 22.0  |                |
| adj. $R^2$ = .14    n=28276       |               |       |                  |       |                |
| B. ENGLISH MOTHER TONGUE WIVES    |               |       |                  |       |                |
| PCTFR                             | -0.0028       | -33.2 | -0.0174          | -20.8 | -0.0062        |
| YRS EDUC                          | 0.0038        | 9.5   | 0.0456           | 8.2   | 0.0163         |
| FR ETHN                           | -0.0461       | -10.5 | -0.3470          | -7.5  | -0.1294        |
| AGE                               | 0.0005        | 7.1   | 0.0080           | 7.1   | 0.0028         |
| FR ABIL                           | -0.1503       | -30.7 | -0.8676          | -18.9 | -0.2310        |
| QUE BORN                          | 0.0397        | 6.8   | 0.3826           | 5.9   | 0.1453         |
| CONSTANT                          | 0.9287        | 144.4 | 1.3046           | 4.5   |                |
| adj. $R^2$ = .12    n=28205       |               |       |                  |       |                |
| C. FRENCH MOTHER TONGUE HUSBANDS  |               |       |                  |       |                |
| PCTFR                             | 0.0039        | 34.6  | 0.0190           | 23.9  | 0.0026         |
| YRS EDUC                          | -0.0015       | -2.3  | -0.0092          | -1.6  | -0.0013        |
| FR ETHN                           | 0.0797        | 7.5   | 0.4103           | 5.7   | 0.0771         |
| AGE                               | 0.0003        | 2.1   | 0.0039           | 2.7   | 0.0005         |
| ENG ABIL                          | -0.0458       | -9.4  | -0.7946          | -14.0 | -0.0599        |
| QUE BORN                          | 0.0026        | 0.3   | -0.0269          | -0.5  | -0.0027        |
| CONSTANT                          | 0.5998        | 37.0  | 0.5078           | 3.9   |                |
| adj. $R^2$ = .19    n=13921       |               |       |                  |       |                |
| D. FRENCH MOTHER TONGUE WIVES     |               |       |                  |       |                |
| PCTFR                             | 0.0033        | 28.2  | 0.0160           | 20.0  | 0.0027         |
| YRS EDUC                          | -0.0043       | -5.8  | -0.0267          | -4.2  | -0.0045        |
| FR ETHN                           | 0.0990        | 8.1   | 0.5198           | 6.6   | 0.1180         |
| AGE                               | -0.0003       | -1.8  | -0.0018          | -1.2  | -0.0003        |
| ENG ABIL                          | -0.0719       | -13.6 | -0.7546          | -16.2 | -0.0771        |
| QUE BORN                          | 0.0397        | 4.9   | 0.0849           | 1.6   | 0.0144         |
| CONSTANT                          | 0.6446        | 35.2  | 0.7357           | 5.4   |                |
| adj. $R^2$ = .20    n=13992       |               |       |                  |       |                |

- Notes:
1. For English mother tongue husbands, partial derivatives are evaluated with mean values of age and education (44 and 11 respectively) and PCTFR=68, FR ABIL=1, QUE BORN=1 and FR ETHN=1. For English mother tongue wives, partial derivatives are evaluated with mean values for age and education (41 and 11) respectively and PCTFR=68, FR ABIL=1, QUE BORN=1, FR ETHN=1.
  2. For French husbands, partial derivatives are evaluated with PCTFR=68, YRS EDUC=11, AGE=41, ENG ABIL=1, QUE BORN=1, FR ETHN=1. For French wives, PCTFR=68, YRS EDUC=11, AGE=41, ENG ABIL=1, QUE BORN=1, FR ETHN=1 for the purpose of obtaining partial derivatives.



in the effects of ability in the other official language were found by gender or language group. Official language ability is a current variable so it could be argued that official language ability may be a result of intermarriage. However, language acquisition (except perhaps in the case of immigrants) will generally occur at young ages and therefore usually before marriage. Language acquisition can be viewed as an investment (Grenier and Vaillancourt, 1983; Ridler and Pons-Ridler, 1984) and the younger a person is, the more years payoff there is to the new language acquired. The costs of learning another language may also be less for younger persons than older persons since children seem to learn languages more easily than adults and the price of their time is less. This does not, of course, imply that language shift is unaffected by intermarriage although language acquisition and language shift (adoption of a home language different from one's mother tongue) are related — some ability to communicate in the language must occur before a language shift can take place. Individuals with an ability in the other official language will be more able to communicate with persons of the other mother tongue and having learned the other language may reflect a greater interest in the other's culture and more interaction with the other group.

The effects of other official language ability are quite large: for English mother tongue husbands with the characteristics stated in the note to Table 2, (age 44, 11 years of education, etc.), being able to speak French lowers the probability of an endogamous marriage by 22 per cent (see last column). For French mother tongue husbands with the characteristics noted in Table 2, being able to speak English lowers the probability of marrying a French mother tongue spouse by 6 per cent. There is a reason for this difference between the French and English in the magnitude of effect of official language ability. As mentioned earlier, the partial derivatives depend on the point of evaluation. Table 2 partial derivatives are based on 68 per cent French in the area (the mean per cent French for the French mother tongue sample). Repeating the calculations but setting the French population in the area at the relatively low level of eight per cent (the mean for the English mother tongue group) provides some interesting results.<sup>10</sup>

When there is only eight per cent French in the area, then for both English mother tongue husbands and wives, French language ability reduces the probability of endogamy by six per cent. For French mother tongue persons, if the area is only eight per cent French instead of 68 per cent, then being able to speak English lowers the probability of endogamy by an estimated 24 per cent for French mother tongue husbands and by 23 per cent for French mother tongue wives (results not tabulated). In other words, the magnitude of effect of language ability depends on the context: where the per cent French is high, then for an English mother tongue person the effect of being able to speak French has a

greater negative effect on the probability of endogamy than where the per cent French is low. For French mother tongue persons, being able to speak English has a greater negative effect when the per cent French is low. Ability to speak the other official language takes on more importance in affecting the chances of intermarriage when there is also more opportunity for such marriage as indicated by a greater presence of the other mother tongue group.

For French mother tongue wives and husbands there is a positive correlation between endogamy and having been born in Quebec ( $r = .33$  for French wives and  $.29$  for French husbands). For English mother tongue husbands and wives, the correlation between Quebec born and endogamy is negative ( $-.20$  for husbands and  $-.16$  for wives). When per cent French in the CMA or province (and other variables) is held constant, however, born in Quebec is not significant for the French husbands and wives but it has a positive effect on the probability of endogamy for English mother tongue husbands and wives. In other words, *cet. par.* English mother tongue persons are more likely to be endogamous if they were born in Quebec. This is somewhat surprising since one would expect that being born in Quebec would provide English mother tongue individuals with a greater appreciation of French language and culture, reducing the probability of endogamy.

Older English mother tongue husbands and wives are more likely to be endogamous, as is the case for French mother tongue husbands (age is not significant for French mother tongue wives). To the extent that intermarriage is associated with anglicisation of French spouses, these results suggest a continued concern for the future of the French language population since there is some indication that younger individuals are more likely to intermarry (see Castonguay, 1979, for discussion of the relationship between intermarriage and anglicisation and for more evidence on increasing rates of intermarriage).

The effects of education are interesting. As noted earlier, the direction of effect of education on endogamy was uncertain. The direction of effects are the same for husbands and wives of the same mother tongue but the results for French mother tongue persons are the opposite of those for English mother tongue individuals. The results are clearest (in terms of significance) for the women: more years of education has a positive effect on the probability of endogamy for English mother tongue wives while education reduces the likelihood of endogamy for French mother tongue wives.

*Conclusion*

As with many other traits, most spouses share the same mother tongue, but increasing rates of linguistic intermarriage noted by other researchers (at least outside Quebec) and the role of these mixed marriages in assimilation make such marriage patterns worthy of research. Individual level variables as well as context variables are important in affecting the probability of endogamy. The higher the per cent French in the area, the easier it is for French mother tongue individuals to find a spouse from the same language group while for English mother tongue persons, the probability of exogamy is increased. The individual characteristics of education, ethnic origin and official language ability were generally found to significantly affect the probability of endogamy. Evidence from the multivariate analysis here supports Castonguay's findings concerning retrogamy.

Of particular interest is the effect of official language ability on the probability of endogamy. For both French and English mother tongue husbands and wives the ability to speak the other official language decreased the probability of endogamy with the size of effect depending on the linguistic composition of the area. If current policies (at least outside Quebec) aimed at increasing bilingualism are successful in increasing the knowledge of Canada's two official languages, then an unintended consequence may be to increase linguistic intermarriage.

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Footnotes

1. Mother tongue in the 1981 census of Canada is the language first learned and still understood. See de Vries (1985) for a discussion of language and ethnicity census questions. See Cartwright (1987) for evidence of greater French language ability and use among young Anglophones.
2. This paper uses the French and English mother tongue populations and linguistic intermarriage refers here to marriage between these groups. Endogamy refers to marriage within the same mother tongue while exogamy refers to linguistic intermarriages where an English mother tongue person is married to a person from the French mother tongue group. There has been some discussion of the use of ethnic origin or mother tongue for studies of intermarriage and language shift. Castonguay (1977, 1982) makes the case for the use of mother tongue rather than ethnic origin in such studies (see also Ryder, 1955 and de Vries, 1985).
3. Most francophones are Catholic; while of English mother tongue persons, about two-thirds are Protestant and less than one-quarter are Catholic. This means that a French mother tongue person, almost all of whom are Catholic, if he/she selects an English mother tongue spouse at random has about a .78 probability that such a spouse will not be Catholic. While about 98 per cent of endogamous French mother tongue marriages are homogamous with respect to religion, about one-quarter of mixed English-French mother tongue marriages are mixed Protestant-Catholic marriages.
4. The fact that more educated persons marry later may appear to contradict the idea of more educated persons being more efficient at search in the marriage market. However, education is time intensive which tends to delay marriage (Keeley, 1977).
5. Carter and Glick (1976) report that probabilities of intermarriage in the United States differ by sex.
6. The number of husbands of a particular mother tongue need not be equal to the number of wives due to intermarriage.
7. This seemed preferable to the inclusion of many interaction terms between variables and gender and language group which would have been somewhat cumbersome particularly when it came to interpreting the partial derivatives.
8. CMAs identified in the household file of the 1981 census are: Halifax, Quebec, Montreal, Ottawa-Hull, Toronto, Hamilton, St. Catharines-Niagara, Kitchener, London, Winnipeg, Calgary, Edmonton and Vancouver.
9. With a dichotomous dependent variable and OLS estimation, significance tests using the *t* statistics are invalid due to heteroscedasticity. For problems with the use of OLS in this situation, see Hanushek and Jackson, 1977.
10. All other values of the independent variables used in the calculation of the partial derivatives remain the same as noted in Table 2.
11. This result does not appear to be due to multicollinearity between the per cent French (a current measure) and born in Quebec. Simple correlations between PCTFR and ENDOG are negative and negative between QUE BORN and ENDOG while PCTFR and QUE BORN are positively correlated.

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