

Sibling Structure and the Labour Market: Evidence from Canada

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Researchers in economics, psychology and sociology are well aware that there exist important relationships between childhood conditions and socioeconomic outcomes in later life. Currie and Thomas (1999), for example, find that test scores from as young as age 7 are correlated with labour market outcomes at age 33. Both the intra- and interhousehold allocation of resources play a large role in determining the level of resources available to individual children, and fundamental to the intrahousehold allocation of resources are issues of birth order and sibling size, which are the focus of this study. Haveman and Wolfe (1993) identify sibling size as one of the key determinants of children's success broadly defined.

In economics much of the theoretical motivation for the study of sibling size derives from models of the optimal allocation of family resources (Becker and Lewis 1973; Becker and Tomes 1976), or models that also allow for parents to have an aversion for inequality (Behrman, Pollak and Taubman 1982, 1989). Birdsall (1991) makes a useful contribution that focuses on mother's labour supply, and learning by doing. Central to these models is that fixed family resources are reduced as family size increases and that there is a trade-off between quantity and quality.¹

Most of the empirical research on these issues has been conducted using American data, and implicitly American social structures and government programs. Haveman and Wolfe (1993, 1995) and Taubman (1996) survey the literature, and Blake (1989) is a particularly extensive study in the sociology literature, although she does not look at labour market outcomes. There are also a number of

¹ Lundberg and Rose (2000) provide evidence that family financial resources should not be viewed as being held constant as sibling composition varies, rather men's labour supply and wages are responsive to their family size and sex composition. Nevertheless, resources per child are reduced as the number of children grows.

studies using data from developing countries such as Birdsall (1991), and Ejrmaes and Portner (2000); Behrman (1997) surveys the literature. Less is known, however, about sibling structure's impact on outcomes in later life, including educational attainment, employment and wages in developed countries with more active social programs and more heavily subsidized education and health systems than the United States, and very little research has been done in Canada. Bjorklund and Jantti (1998) begin to fill this international void with a comparison of the relationship between sibling size and earnings in the United States, Finland and Sweden. In almost all of their specifications they find that the negative effect of increasing sibling size is much stronger in the United States, and they discuss the relationship to differences in social policy. However, given the nature and goal of their study, their analysis does not allow for differences across the sexes, does not control for birth order, and uses only earnings as the dependent variable.

In this paper we focus on sibling size's and birth order's impact on educational attainment, employment, and wages. We analyze each sex separately, and explore factors such as the mother's labour market activity and family stability that may influence the impacts of the variables of interest.

II. Data and Methodology

Statistics Canada's General Social Survey (GSS) cycles nine (1994) and ten (1995) are the source of data for this study. Each survey is, once the survey weights are employed, a representative sample of the civilian non-institutional population aged 15 and over who live in one of the 10 provinces. The sample for analysis includes only those between the ages of 25 and 54 who were either born in

Canada or immigrated before age 15. We also drop any respondents who were in school full-time or have crucial variables missing (age, sex, education, sibling size, and birth order).

A series of indicator variables for parent's education (university degree, community college degree, some post-secondary, high school graduate, less than high school, and unknown education) is used to control for family background characteristics. This is the only background variable that is available in both data sets, and Haveman and Wolfe (1993), in surveying the literature, conclude that it (perhaps also proxying for other unobserved characteristics) appears to be the single most important determinant of children's success. When this variable is missing for either parent, rather than drop the observation from the sample, we generate a dummy variable for missing father's or mother's education. Both parent's education is missing for approximately 10% of the observations. Unfortunately, a measure of wages is only available in GSS 9, therefore, the analysis of wages is restricted to this data set. Given the restrictions in the public use file, both birth order and sibling size are measured as one thru five inclusive, and six or more. The respondent's education is measured as the highest level attained: university, community college, trade school, incomplete university, incomplete college, incomplete trades, high school graduate, incomplete high school, and elementary only.

For each of educational attainment, employment and wages an appropriate regression approach is employed. Researchers have become aware of the potential importance of omitted variables bias in estimating either sibling size, or birth order, coefficients without controlling for the other.² Since education in our data set is an ordered, but not cardinal, measure we use an ordered

² A similar, but less discussed, problem arises in looking at the sibling sex composition: single sex sets of siblings, or sets with only one child of a particular sex, are more likely to be observed in

probit. For employment we use a simple probit model, and for the wage equations the standard semi-logarithmic ordinary least squares specification.³ In those wage regressions where we control for education, a full set of dummy variables (less one) is used to represent this abovementioned set of education outcomes, however, the set is not obviously appropriate for exploring the impact of sibling size or birth order on educational attainment where we use an order probit. For these regressions we must make some judgements in ranking the education levels. In an effort to rank the categories according to years of study we use seven groups in the ordered probits and aggregating community college, trade school and incomplete university as a single group. As a specification test we re-estimated our models with three alternative groupings, but found it made little substantive difference to the results.

III. Results

III.1 Educational Attainment

As a simple indicator of educational attainment, a cross-tabulation showing the fraction of each sibling size and birth order cell that has completed university is presented in table 1. Reading across the

smaller families.

³ Interested readers are directed to standard textbooks, such as Greene (1998) for a discussion of the econometric theory related to these models.

rows gives an estimate of the impact of increasing sibling size holding birth order constant, and reading down the columns provides the reverse. The “total” column, and row, provide the marginal probabilities for birth order and sibling size respectively. Men and women are tabulated separately with the results for women in panel A. For both sexes the marginals show a clear and substantial decline in the fraction completing university with increasing birth order and sibling size. The probabilities are broadly similar for men and women and drop substantially from about 30% having a university degree for a sibling size of one, to about 12-14% for five or more siblings. As birth order moves from one to five or higher, the fraction with a university degree drops from about 26% to 10-12%. The cross-tabulation, however, reveals that the drop is not as large across birth orders holding family size constant as it is in the other direction. While these simple descriptive statistics show very substantial differences in education across the variables of interest, they do not control for many confounding factors. For example, younger individuals are likely to come from both smaller families and be more educated, similarly more highly educated parents are likely to have both small families and highly educated offspring.

We, therefore, turn next to a series of ordered probit regressions that allow us to explore the birth order and sibling size effects on educational attainment conditioning on these other factors. While we only present the sibling size and birth order variables in table 2, and most subsequent tables, we also include in each regression a GSS 9, five age, nine province, five mother’s education, and five father’s education indicator variables. Summary statistics for these variables can be seen in Appendix table 1. For each sex we run six different specifications to explore aspects of the issue at hand. In these, and all subsequent regressions, birth order, and sibling size, six or greater is the omitted group. As is evident

from the tables, each has two panels, one for each sex, and each panel has columns numbered one through six. Column numbers are repeated twice in each table: once for women, and again for men. Each regression with the same column number has the same specification. Column 1, which looks at birth order not controlling for sibling size, shows the statistically significant effect observed in much of the early literature that did not control for family size: for both sexes earlier birth order children obtain higher levels of education. The effect seems somewhat stronger, and tails off more slowly, for women.

Results from a regression controlling only for sibling size are displayed in column 2. The coefficients are statistically significant and the magnitude of the effect is larger than that for birth order, and it is more similar for women and men. Since these are ordered probit regression coefficients, their magnitude is difficult to interpret. To give some sense of the magnitude of the effect, the coefficient on father high school graduate, with university being the omitted group, is slightly greater than -0.5, and that on less than a high school education is slightly larger than -0.8. For women the same coefficients are about -0.4, and -0.6. Thus, moving from a sibling size of 6 or greater to being an only child increases school attainment about the same as the increase from one's father's education changing from high school, to university, graduate.

Column 3 presents a regression with controls for both sibling size and birth order. The sibling size coefficients change only modestly for the women, and increase slightly for the men. But the birth order coefficients change more dramatically, and quite differently, for the two sexes. For women the birth order profile is effectively flat. However, for men the coefficients move from being statistically significant and positive, to being statistically significant and negative. Conditional on sibling size, earlier born men appear to have lower educational attainment than later born ones. This result is at odds with

much of the literature, for example, Behrman and Taubman (1986), which finds either flat or decreasing educational attainment with increasing birth order. We verified our coding of the variables, and ran separate regressions for each cycle of the survey since they are independent samples and coded separately. In each sample we observed the same phenomena for men and women, and we present the results for GSS 9 as appendix table 2 for the reader.

To explore the impact of merging the two surveys, we crossed the birth order and sibling size variables with an indicator for GSS 9 and performed test of their joint significance in regressions based on those in column 3 of table 1. For females the test statistic is $F(10)=13.12$ (p-value=0.2171) suggesting no statistically significant differences between the coefficients in the two data sets. But for men the statistic is $F(10)=21.38$ (p-value=0.0186) suggesting some statistically significant differences exist. This is surprising since the two are both random samples of the population taken only a year apart, but the GSS 10 has an expanded set of questions about sibling size with explicit questions about half siblings and adoptions. It is plausible that this may have caused the difference. Whatever the source of the difference, the GSS 10 sibling size profile is somewhat steeper than that in GSS 9, in particular the coefficients on sibling size one and two are larger in GSS 10 than GSS 9, though the profiles from each survey have the same general shape and substantive interpretation. The birth order coefficients are not statistically different. Despite this finding, we pursue an analysis with the two samples merged to benefit from the larger sample size. We did run the entire analysis on each sample independently (not shown) and, despite the statistical difference, there was no important difference in interpretation between the two.

A specification presented by Birdsall (1991) using Columbian data that combined men and

women is replicated in column 4 for each sex with remarkably similar results. The human-capital time-allocation theory she develops suggests that middle-born children are worse off than first or last born children. Her empirical results, like those here, have a positive and statistically significant coefficient for the last born, but the coefficient on first born, while positive, is not always statistically significant. Once we control for the full set of birth order variables in column 4, the youngest born coefficient reduces in magnitude and becomes statistically insignificant for the men.

In column 6 a much larger model is estimated including a full set of brother-sister combination variables (i.e. 1 brother, no sister; 2 brothers, no sisters etc.) with only child being the omitted group. The goal is to explore not just sibling size, but the impact of the sibling sex composition. Coefficients for these latter variables are presented in table 3. In these regressions the number of brothers and sisters is capped at four, and coefficients along each diagonal represent the same sibling size. Although we do not test it formally, we can see no evidence of the sibling sex composition having a substantial impact on educational attainment. For example, the coefficients do not grow more negative, along each diagonal, as the fraction male increases as some might have expected. In contrast to Butcher and Case (1994), but in accord with Kaestner (1996) who used the same US data source, we see no sibling sex effects. However, this analysis remains preliminary.

One question that may arise with this analysis is whether is adequate to only control for age, rather than allowing for parameter heterogeneity as a function of age. It seems credible that birth order and/or sibling size effects may vary with birth cohort. We performed two variants on a single test. First, we interacted an indicator variable set to one if the observation was in the older half of the age distribution with the birth order and sibling size variables and performed a Wald test to see if we could

reject the hypothesis that the coefficients were all the same. The results for the model based on column 3 in table 2 are $P^2(8)=6.70$ (p-value 0.5693) for the men, and $P^2(8)=12.28$ (p-value 0.1392) for the women, and clearly reject the hypothesis that there are large differences across the life cycle. Still, our test may not be powerful enough because of a slowly moving trend, or because of a nonlinear relationship with age, so, second, we repeated the same test, but dropped the middle age group, those between 35 and 44. The results are very similar: the test statistic for the men is $P^2(8)=10.19$ (p-value 0.2517), and $P^2(8)=10.72$ (p-value 0.2179) for the women.

An additional issue, argued most forcefully by Kessler (1991) is that the regressions, like the results in table 1, should allow for a full set of cross effects between birth order and sibling size since there is not reason to believe that the restrictive specification employed in table 2.⁴ We, therefore, included the full set of birth order and sibling size variables (i.e. first born of one, first born of two etc.) and tested for their statistical significance. For the men test statistic is $P^2(10)=11.05$ (p-value 0.3539), and for women it is $P^2(10)=14.23$ (p-value 0.1626), thus both regressions reject the need for the cross-terms and suggest that if any such influence exists it is not very empirically important.

To explore extensions on birth order and sibling size issues, we specified a series of models that are presented in table 4. All of these regressions are variations on those in column 5 for each men and women in table 2. For both men and women the first two columns stratify the sample on whether the respondent's mother worked when the person was aged 15. Birdsall's time allocation theory is the

⁴ In fact Kessler's specification is restrictive on other dimensions. For example, he only includes birth order variables for first born and last born, and sibling size variables for two child and three child families.

motivation for this approach. She hypothesizes that if time spent with children is crucial, then birth order and sibling size effects should be larger in households where the mother does not work. While the mother worked sample is smaller so that inference is difficult, there is little evidence in any large differences across the two regressions. One exception is that birth order effects for children of working mothers may be U-shaped.

Columns 3 and 4 for each sex look at the impact of household stability. The sample is stratified on whether or not the respondent lived with her or his parents continuously to age 15. An unstable household may have been the result of any of a range of factors including divorce or death, and it is interesting to note from the sample sizes the large fraction of the sample that report instability. For women the birth order effects remain flat and very similar for both groups, but for the men from stable homes the coefficients estimates appear to be somewhat erratic. For both sexes though, there is a clear change in the pattern of the sibling size coefficients. The profiles are much steeper in unstable homes than in the table 2, and for children from stable homes the sibling size coefficients have an inverted-U shape with small sibling sizes obtaining more education than either only children or children from large families. Overall, the sibling size profile seems to be strongly affected by the stability of the home.

Finally, parent's age at the birth of the respondent is considered in columns 5 and 6. In 5 both parent's ages are included, and in 6 only the mother's. Note that observations with missing information on either parent's education has an appropriate indicator variable set equal to one. These regressions use only the GSS 10 data, since the parent's age at birth variables are not available in GSS 9. For both sexes mother's age has a much larger impact than father's, and children's education is increasing at a decreasing rate with mother's age. Relative to the sibling size coefficients in table 2, the introduction of

parent's age makes the pattern slightly more like an inverted-U, but the effect is mild. For men, the birth order coefficients move from being statistically significantly negative to insignificantly positive for the early birth orders. For women the first born coefficient becomes larger and statistically different from zero.

Overall, sibling size, and to a much lesser degree birth order, have a large impact on educational attainment, almost as large as that of parental education, which previous research has seen as the most important determinant of children's education. While we do not see any effect of the sibling sex composition on educational outcomes, family stability seems to have substantial impact on the sibling size effect. Mother's age at the birth of the child also seems to have an important impact on educational outcomes, but its introduction does not appear to have a large impact on the variables of interest.

III.2 Employment

Kessler (1991) finds sibling size to be an economically important determinant of women's employment status using U.S. data. In this section we explore similar relationships in a more comprehensive way and find that sibling size, and to a lesser extent birth order, appear to have sizeable impacts on employment propensities. Table 5 shows the proportion of each birth order- sibling size cell whose primary activity in the previous year was employment in a format like table 1. We choose to focus on the primary activity in the previous year, rather than that in the current week, since it is less sensitive to idiosyncratic shocks, and, therefore, provides more information. Interestingly, for both men

and women, only children seem to be less likely to be employed than the average, as are those from large families; both sexes show employment probabilities as having an inverted-U shape in sibling size. The peak to trough gaps are also substantial, about 5% for the men, and 7% for the women. Employment propensities also seems to decline slightly with increasing birth order, but this does not condition on other correlates of employment.

In table 6 we present a series of probit regressions with similar sets of regressors as those in table 2. No controls for the respondent's education is included. For women there are no obvious birth order effects, but for men the second and third born seem to be less likely to work, as are those from extremely large families. Sibling size has a more similar impact for women and men with the dummy variables' coefficients tracing out an inverted-U shape; first born, and very high order, children are less likely to be employed than those in the middle, and the (conditional) difference in the probabilities between the peak and trough is about 5-6%. For men, second born are very much like first born ones, and the difference peak to trough across birth orders is somewhat larger than that for women. In column 6 we add a variable not used in the other regressions: an indicator for self-reported poor health. It seems plausible that parent's sibling size decision may be affected by having children in very poor health, and this may affect employment as well. While it is clear that the poor health indicator has a large (conditional) relationship with employment, it does not cause the birth order or sibling size coefficients to change very much. We were concerned that the employment effect may vary across age groups and, therefore, we stratified the sample into two and re-estimated the regressions. There were no substantial differences between the two age groups.

In table 7 controls for the respondent's education are added. They have little impact on the

birth order coefficients, but attenuate those for sibling size somewhat. Still there remains a noticeable sibling size effect, especially for the women.

III.3 Wages

Unfortunately wage data is only available in the GSS 9, therefore the wage regressions are only for this data set. Unadjusted hourly wage summary statistics by sibling size and birth order is presented in table 8. The marginal probabilities clearly show substantial decreases in wages, in the order of 2 to 3 dollars per hour, with both increasing sibling size and birth order for both sexes. Table 9 examines the conditional relationships associated with the family structure variables of interest in a series of (ln) wage equations. These regressions do not control on education, therefore any effects the birth order and sibling size variables have on wages that occur through inducing higher educational attainment are reflected in the coefficients on the variables of interest.

A first look at table 9 reveals that, conditioning on both sets of variables, there is almost no observable birth order effects except for first born women having marginally statistically significant greater wages than middle born ones. However, stronger sibling size effects are evident. Although the details differ slightly across the sexes, for both the sibling size coefficients trace out an inverted-U shape with two or three child families having higher wages than either smaller or larger ones. For men there is a large increase between one and two child families, but for women the large increase does not occur until between two and three. The conditional relationship of table 9 appears quite different from the unconditional one in table 8. While the age variable has some impact, the key variables that alter the

shape appear to be the parent's education. Economically, the size of the coefficients is quite important with the gap between a sibling size of six or more, and the peak (two or three children) being 10 to 20%.

A question of interest is how much of the sibling effect is mediated by the increase in educational attainment observed in section III.1. To address this issue we replicate the regressions in table 10, but introduce a series of eight education indicators. For men there is now a slight U shape to the birth order profile, but for women the profile becomes very flat. The sibling size coefficients, as one might expect, become much more muted with a reduced gap between peak and trough of the inverted-U. Middle sized families still do slightly better, but the peak of the profile is lower and shifts slightly for both sexes. Still, the peak to trough gap can be as much as 10%.

IV. Conclusion

This paper shows a clear and substantial impact of sibling size, and to a lesser extent birth order, on various aspects of the Canadian economy. These family structure variables are shown to impact educational attainment, employment and wages. Sibling size impacts wages both directly, and indirectly through education. Further, the magnitude of the impacts are not inconsequential, even though we control for parent's education throughout the analysis. For education, on average, moving from a sibling size of 6 or greater to being an only child increases school attainment about the same as the increase that results from changing one's father's education from high school, to university, graduate. Employment probabilities differ by as much as 6-7% across sibling sizes for men, and slightly more for

women. And wages differences of up to 10-20% are observed across sibling sizes.

Given that sibling size is a variable that many families spend much time considering, and it has been at the centre of many social and tax policies, these differences represent important outcomes of our societal choices. Much more research is needed to understand the mechanisms by which these gaps occur, and to consider the many other factors not studied here because appropriate measures are not in our data set. The differences between families that remained intact until the child was age 15, compared with those that did not, suggests that many factors interact with those found here. Future work looking at the interactions of child care arrangements with sibling size effects would seem to be a particularly important issue not addressed here, and exploring heterogeneity across parent's background would also be worthwhile.

- Becker, G.S. and H.G. Lewis (1973), 'On the Interaction between the Quantity and Quality of Children.' *Journal of Political Economy* 81(2), S279-88..
- Becker, G.S. and Tomes, N. (1976) 'Child Endowments and the Quantity and Quality of Children.' *Journal of Political Economy* 84(4), S143-162.
- Behrman, J.R. (1997) 'Intrahousehold Distribution and the Family.' In *Handbook of Population and Family Economics* (Vol.1A), eds. M. R. Rosenzweig and O. Stark (Amsterdam: Elsevier Science B.V.), 125-187.
- Behrman, J.R., and P. Taubman (1986) 'Birth-order, schooling, and earnings.' *Journal of Labour Economics* 4, 121-45.
- Behrman, J.R., Pollack, R.A. and Taubman, P. (1982) 'Parental preferences and provision for progeny.' *Journal of Political Economy* 90, 52-73.
- Behrman, J.R., Pollack, R.A. and Taubman, P. (1986) 'Do Parents Favor Boys?' *International Economic Review* 27(1), 33-54.
- Behrman, J.R., Pollack, R.A. and Taubman, P. (1989) 'Family resources, family size, and access to financing for college education.' *Journal of Political Economy* 97, 398-419.
- Birdsall, N. (1991), 'Birth Order Effects and Time Allocation.' In *Research in population economics* (Vol.7). ed. T.P. Schultz (Greenwich, Conn. and London: JAI Press), 191-213.
- Bjorklund, A. and M.J. Janth (1998) 'The Impact of the Number of Siblings on Men's Adult Earnings: Evidence form Finland, Sweden and the United States.' Mimeo and Stockholm University.
- Blake, J. (1989) *Family Size and Achievement*. London: University of California Press, Ltd.
- Butcher, K.F. and Case, A. (1994) 'The Effect of Sibling Sex Composition on Women's Education and Earnings.' *The Quarterly Journal of Economics* 59(3), 531-563.
- Currie, J. and Thomas, D. (1999) 'Early Test Scores, Socioeconomic Status and Future Outcomes.' NBER Working Paper No. 6943.
- Ejrnæs, M. and K. Portner (2000), 'Birth Order and the Intrahousehold Allocation of Time and Education.' University of Copenhagen.

- Greene, W.H. (1998), *Econometric Analysis*, ed. L. Jewell (New York: Prentice-Hall International, Inc.).
- Haveman, R., and B. Wolfe (1995) 'The determinants of children's attainments: a review of methods and findings.' *Journal of Economic Literature* 33, 1829-78.
- Kaestner, R. (1996) 'Are Brothers Really Better? Sibling Sex Composition and Educational Achievement Revisited' NBER Working Paper No. 5521.
- Kessler, D. (1991) 'Birth Order, Family Size and Achievement: Family Structure and Wage Determination.' *Journal of Labor Economics* 9(4), pp413-426.
- Taubman, P. (1996) 'The roles of the family in the formation of offspring's earnings and income capacity.' In *Household and Family Economics*, ed. P.L. Menchik (Massachusetts: Kluwer Academic Publishing).

Table 1: University Graduation by Birth Order and Sibling Size

Birth Order	Panel A: Women						Panel B: Men					
	Sibling Size						Sibling Size					
	1	2	3	4	5	Total	1	2	3	4	5	Total
1	0.30 (0.03) 224	0.28 (0.02) 490	0.25 (0.02) 391	0.25 (0.03) 263	0.19 (0.02) 334	0.26 (0.01) 1702	0.30 (0.03) 187	0.32 (0.02) 446	0.27 (0.02) 392	0.20 (0.03) 217	0.15 (0.02) 279	0.26 (0.01) 1521
2		0.20 (0.02) 424	0.26 (0.02) 420	0.17 (0.02) 268	0.12 (0.02) 316	0.19 (0.01) 1428		0.24 (0.02) 416	0.25 (0.02) 378	0.22 (0.03) 242	0.15 (0.02) 311	0.22 (0.01) 1347
3			0.21 (0.02) 342	0.18 (0.02) 264	0.10 (0.02) 391	0.16 (0.01) 997			0.24 (0.02) 305	0.25 (0.03) 233	0.14 (0.02) 326	0.21 (0.01) 864
4				0.23 (0.03) 224	0.13 (0.02) 382	0.17 (0.02) 606				0.27 (0.03) 189	0.16 (0.02) 320	0.20 (0.02) 509
5					0.10 (0.01) 1031	0.10 (0.01) 1031					0.12 (0.01) 863	0.12 (0.01) 863
Total	0.30 (0.03) 224	0.24 (0.01) 914	0.24 (0.01) 1153	0.21 (0.01) 1019	0.12 (0.01) 2454	0.19 (0.01) 5764	0.30 (0.03) 187	0.28 (0.02) 862	0.26 (0.01) 1075	0.23 (0.01) 881	0.14 (0.01) 2099	0.21 (0.01) 5104

Notes:

1. Each birth order/sibsize cell contains means, standard errors in parenthesis and number of observations from top to bottom

Table 2: Birth-order and Sibling Size Ordered Probit Regressions for Education

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.386*** (0.065)		0.061 (0.080)	0.152*** (0.049)	0.137 (0.089)	-0.033 (0.085)	0.226*** (0.070)		-0.254*** (0.088)	0.068 (0.049)	-0.202** (0.10)	-0.369*** (0.092)
2	0.234*** (0.065)		-0.057 (0.078)		-0.013 (0.082)	-0.147* (0.084)	0.136* (0.070)		-0.307*** (0.089)		-0.279*** (0.093)	-0.416*** (0.092)
3	0.163** (0.068)		-0.066 (0.079)		-0.045 (0.079)	-0.154* (0.083)	0.056 (0.076)		-0.294*** (0.089)		-0.280*** (0.090)	-0.403*** (0.093)
4	0.206*** (0.076)		0.058 (0.083)		0.063 (0.082)	-0.017 (0.087)	0.065 (0.084)		-0.158* (0.092)		-0.154* (0.092)	-0.261*** (0.095)
5	0.134* (0.082)		0.059 (0.085)		0.057 (0.085)	-0.006 (0.090)	-0.071 (0.091)		-0.156 (0.096)		-0.158* (0.095)	-0.251** (0.099)
Sibling Size:												
1		0.593*** (0.097)	0.542*** (0.108)	0.355*** (0.124)	0.391*** (0.136)		0.561*** (0.106)	0.675*** (0.118)	0.398*** (0.131)	0.574*** (0.145)		
2		0.411*** (0.059)	0.415*** (0.072)	0.305*** (0.069)	0.334*** (0.087)		0.485*** (0.059)	0.627*** (0.075)	0.414*** (0.067)	0.572*** (0.089)		
3		0.344*** (0.052)	0.372*** (0.063)	0.285*** (0.055)	0.321*** (0.071)		0.399*** (0.055)	0.542*** (0.068)	0.360*** (0.057)	0.508*** (0.074)		
4		0.269*** (0.053)	0.284*** (0.061)	0.235*** (0.054)	0.251*** (0.065)		0.367*** (0.059)	0.487*** (0.068)	0.346*** (0.060)	0.466*** (0.071)		
5		0.250*** (0.060)	0.249*** (0.065)	0.227*** (0.060)	0.228*** (0.066)		0.157*** (0.061)	0.256*** (0.067)	0.144** (0.061)	0.243*** (0.068)		
Youngest Child				0.116** (0.049)	0.102* (0.053)				0.115** (0.052)	0.067 (0.056)		
Sibsex Variables	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-sq	0.063	0.066	0.067	0.067	0.067	0.069	0.061	0.068	0.069	0.068	0.069	0.072
# obs :	5764	5764	5764	5764	5764	5764	5104	5104	5104	5104	5104	5104

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.

2. Standard errors are provided in parenthesis below the estimates.

3. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.

Table 3: Sibling Sex Coefficients for Education Ordered Probit Regressions

Brothers	Panel A: Women					Panel B: Men				
	Sisters 0	1	2	3	4	Sisters 0	1	2	3	4
0		-0.208* (0.116)	-0.087 (0.119)	-0.151 (0.141)	-0.292* (0.166)		0.003 (0.119)	-0.081 (0.131)	-0.327** (0.155)	-0.278 (0.178)
1	-0.058 (0.109)	-0.179* (0.108)	-0.332*** (0.117)	-0.237 (0.146)	-0.399*** (0.134)	-0.105 (0.121)	-0.174 (0.114)	-0.197 (0.135)	-0.465*** (0.151)	-0.553*** (0.161)
2	-0.230* (0.122)	-0.248** (0.115)	-0.387*** (0.131)	-0.547*** (0.161)	-0.542*** (0.146)	-0.102 (0.140)	-0.160 (0.125)	-0.360*** (0.132)	-0.467*** (0.163)	-0.788*** (0.154)
3	-0.198 (0.151)	-0.290** (0.128)	-0.40*** (0.148)	-0.493*** (0.162)	-0.483*** (0.169)	-0.188 (0.152)	-0.555*** (0.149)	-0.622*** (0.153)	-0.641*** (0.193)	-0.707*** (0.163)
4	-0.466*** (0.166)	-0.548*** (0.162)	-0.664*** (0.134)	-0.645*** (0.154)	-0.816*** (0.134)	-0.207 (0.160)	-0.717*** (0.163)	-0.845*** (0.168)	-0.999*** (0.183)	-0.909*** (0.147)

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.

2. Standard errors are provided in parenthesis below the estimates.

Table 4: Birth-order and Sibsize Ordered Probit Regressions on Education Controlling for Parental Age at Time of Respondent's Birth and Family Background Characteristics

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
	Mother Worked	Mother did not Work	Stable Home	Unstable Home	Parent's Age	Mother's Age Only	Mother Worked	Mother did not Work	Stable Home	Unstable Home	Parent's Age	Mother's Age Only
Birth Order:												
1	0.424** (0.196)	0.060 (0.10)	0.179 (0.144)	0.109 (0.114)	0.312** (0.146)	0.276* (0.144)	-0.20 (0.280)	-0.208* (0.106)	-0.109 (0.142)	-0.288** (0.139)	0.079 (0.146)	0.075 (0.144)
2	0.267 (0.177)	-0.085 (0.092)	-0.021 (0.132)	-0.005 (0.104)	0.064 (0.129)	0.030 (0.126)	-0.344 (0.250)	-0.263*** (0.101)	-0.122 (0.136)	-0.420*** (0.128)	0.033 (0.134)	0.023 (0.132)
3	0.152 (0.170)	-0.086 (0.090)	-0.049 (0.126)	-0.040 (0.103)	-0.005 (0.120)	-0.024 (0.118)	-0.182 (0.230)	-0.316*** (0.098)	-0.365*** (0.132)	-0.231* (0.124)	-0.157 (0.128)	-0.166 (0.126)
4	0.271 (0.175)	0.027 (0.092)	0.063 (0.129)	0.070 (0.109)	0.070 (0.120)	0.058 (0.118)	-0.274 (0.227)	-0.128 (0.10)	-0.045 (0.133)	-0.251** (0.128)	0.046 (0.131)	0.044 (0.130)
5	0.333* (0.196)	-0.010 (0.095)	0.116 (0.136)	0.036 (0.108)	0.076 (0.127)	0.079 (0.126)	-0.313 (0.235)	-0.123 (0.105)	-0.312** (0.148)	-0.071 (0.127)	-0.225* (0.136)	-0.220 (0.136)
Sibling Size:												
1	0.366 (0.251)	0.334** (0.162)	0.347* (0.205)	0.445** (0.181)	0.402** (0.192)	0.425** (0.193)	0.601* (0.306)	0.544*** (0.171)	0.228 (0.218)	0.836*** (0.196)	0.363* (0.191)	0.357* (0.191)
2	0.212 (0.161)	0.344*** (0.106)	0.534*** (0.133)	0.215* (0.114)	0.480*** (0.125)	0.490*** (0.125)	0.613*** (0.216)	0.533*** (0.10)	0.379*** (0.135)	0.730*** (0.118)	0.327*** (0.124)	0.329*** (0.124)
3	0.222 (0.138)	0.334*** (0.083)	0.449*** (0.111)	0.245*** (0.091)	0.370*** (0.104)	0.380*** (0.103)	0.489*** (0.180)	0.492*** (0.083)	0.568*** (0.111)	0.477*** (0.098)	0.451*** (0.102)	0.451*** (0.102)
4	0.052 (0.134)	0.309*** (0.074)	0.436*** (0.104)	0.131 (0.082)	0.383*** (0.097)	0.391*** (0.097)	0.422** (0.172)	0.469*** (0.079)	0.434*** (0.104)	0.513*** (0.099)	0.352*** (0.098)	0.353*** (0.098)
5	0.051 (0.137)	0.272*** (0.075)	0.389*** (0.097)	0.121 (0.090)	0.333*** (0.091)	0.339*** (0.091)	0.234 (0.169)	0.237*** (0.075)	0.269** (0.106)	0.229** (0.091)	0.231** (0.096)	0.228** (0.097)
Youngest Child	0.153 (0.095)	0.078 (0.064)	-0.008 (0.081)	0.158** (0.070)	0.042 (0.075)	0.039 (0.075)	0.091 (0.115)	0.058 (0.066)	0.138* (0.083)	0.022 (0.076)	0.025 (0.078)	0.022 (0.077)
Mother's Age					0.070** (0.030)	0.088*** (0.028)					0.076** (0.034)	0.069** (0.030)
Mother's Age squared					-0.001* (0.001)	-0.001* (0.000)					-0.001** (0.000)	-0.001* (0.000)
Mother's Age Missing					1.051** (0.509)	0.910** (0.443)					0.858* (0.464)	1.178* (0.425)
Father's Age					0.031 (0.024)						-0.014 (0.026)	
Father's Age squared					0.000 (0.000)						0.000 (0.000)	
Father's Age Missing					-0.328 (0.465)						0.555 (0.429)	
R-sq	0.063	0.07	0.084	0.063	0.084	0.083	0.065	0.072	0.076	0.072	0.075	0.074
# obs :	1631	4133	2495	3269	2931	2931	1319	3785	2261	2843	2644	2644

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.

2. Standard errors are provided in parenthesis below the estimates.

3. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.

Table 5: Persons Working by Birth Order and Sibling Size

Birth Order	Panel A: Women						Panel B: Men					
	Sibling Size						Sibling Size					
	1	2	3	4	5	Total	1	2	3	4	5	Total
1	0.61 (0.03)	0.70 (0.02)	0.65 (0.02)	0.69 (0.03)	0.64 (0.03)	0.67 (0.01)	0.87 (0.02)	0.90 (0.01)	0.94 (0.01)	0.95 (0.02)	0.89 (0.02)	0.91 (0.01)
		490	391	263	334	1702	187	446	392	217	279	1521
2		0.67 (0.02)	0.70 (0.02)	0.73 (0.03)	0.64 (0.03)	0.68 (0.01)		0.86 (0.02)	0.91 (0.01)	0.93 (0.02)	0.89 (0.02)	0.89 (0.01)
		424	420	268	316	1428		416	378	242	311	1347
3			0.72 (0.02)	0.68 (0.03)	0.57 (0.03)	0.65 (0.02)			0.86 (0.02)	0.88 (0.02)	0.85 (0.02)	0.86 (0.01)
			342	264	391	997			305	233	326	864
4				0.64 (0.03)	0.64 (0.02)	0.64 (0.02)				0.93 (0.02)	0.91 (0.02)	0.92 (0.01)
				224	382	606				189	320	509
5					0.62 (0.02)	0.62 (0.02)					0.84 (0.01)	0.84 (0.01)
					1031	1031					863	863
Total	0.61 (0.03)	0.69 (0.02)	0.69 (0.01)	0.69 (0.01)	0.62 (0.01)	0.66 (0.01)	0.87 (0.02)	0.88 (0.01)	0.91 (0.01)	0.92 (0.01)	0.87 (0.01)	0.89 (0.01)
	224	914	1153	1019	2454	5764	187	862	1075	881	2099	5104

Notes:

1. Each birth order/sibsize cell contains means, standard errors in parenthesis and number of observations from top to bottom

Table 6 : Birth-order and Sibling Size Probit Regressions on Employment

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.04 (0.03)		-0.02 (0.03)	-0.01 (0.02)	-0.02 (0.04)	-0.02 (0.04)	0.06*** (0.01)		0.05*** (0.02)	0.03** (0.01)	0.05** (0.02)	0.05** (0.02)
2	0.05* (0.03)		-0.01 (0.03)		-0.01 (0.04)	-0.01 (0.04)	0.04*** (0.01)		0.03 (0.02)		0.03 (0.02)	0.03 (0.02)
3	0.03 (0.03)		-0.03 (0.03)		-0.03 (0.03)	-0.03 (0.04)	0.02 (0.02)		-0.01 (0.02)		-0.01 (0.02)	0.00 (0.02)
4	0.02 (0.03)		-0.03 (0.04)		-0.03 (0.04)	-0.04 (0.04)	0.06*** (0.01)		0.05*** (0.02)		0.05*** (0.02)	0.05*** (0.01)
5	0.04 (0.04)		0.02 (0.04)		0.02 (0.04)	0.01 (0.04)	0.05*** (0.02)		0.05** (0.02)		0.05** (0.02)	0.05*** (0.01)
Sibling Size:												
1		0.00 (0.04)	0.01 (0.05)	0.01 (0.05)	0.01 (0.06)	0.01 (0.06)		0.01 (0.02)	-0.03 (0.04)	-0.02 (0.04)	-0.02 (0.04)	-0.04 (0.04)
2		0.06** (0.02)	0.06** (0.03)	0.06** (0.03)	0.07* (0.03)	0.06* (0.04)		0.02 (0.01)	0.00 (0.02)	0.01 (0.02)	0.00 (0.02)	-0.01 (0.02)
3		0.06*** (0.02)	0.07*** (0.03)	0.07*** (0.02)	0.07** (0.03)	0.07** (0.03)		0.04** (0.01)	0.03 (0.02)	0.03* (0.01)	0.03 (0.02)	0.02 (0.02)
4		0.07*** (0.02)	0.08*** (0.03)	0.07*** (0.02)	0.08*** (0.03)	0.08*** (0.03)		0.05*** (0.01)	0.04** (0.01)	0.05*** (0.01)	0.04** (0.02)	0.03** (0.01)
5		0.06** (0.02)	0.07** (0.03)	0.06** (0.02)	0.07** (0.03)	0.06** (0.03)		0.04** (0.01)	0.02 (0.02)	0.03** (0.01)	0.02 (0.02)	0.02 (0.02)
Youngest Child				0.00 (0.02)	0.00 (0.02)	0.00 (0.02)				0.00 (0.02)	0.00 (0.02)	0.00 (0.02)
Poor Health						-0.19*** (0.03)						-0.21*** (0.03)
R-sq	0.047	0.043	0.053	0.047	0.053	0.093	0.022	0.024	0.025	0.024	0.025	0.035
# obs :	5764	5764	5764	5764	5764	5764	5104	5104	5104	5104	5104	5104

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.

2. Standard errors are provided in parenthesis below the estimates.

3. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.

Table 7 : Birth-order and Sibling Size Probit Regressions on Employment Controlling for Education

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.005 (0.028)		-0.017 (0.035)	-0.016 (0.022)	-0.028 (0.040)	-0.030 (0.040)	0.057*** (0.014)		0.059*** (0.018)	0.031** (0.013)	0.056** (0.021)	0.057*** (0.020)
2	0.034 (0.028)		0.000 (0.035)		-0.005 (0.036)	-0.006 (0.037)	0.040** (0.015)		0.036* (0.019)		0.035* (0.020)	0.035* (0.019)
3	0.013 (0.030)		-0.023 (0.036)		-0.026 (0.036)	-0.029 (0.036)	0.018 (0.017)		0.003 (0.022)		0.002 (0.023)	0.005 (0.022)
4	-0.001 (0.034)		-0.031 (0.037)		-0.032 (0.037)	-0.037 (0.038)	0.061*** (0.012)		0.051*** (0.014)		0.051*** (0.014)	0.049*** (0.014)
5	0.025 (0.036)		0.010 (0.038)		0.011 (0.038)	0.011 (0.038)	0.053*** (0.014)		0.048** (0.015)		0.048** (0.015)	0.053*** (0.013)
Sibling Size:												
1		-0.053 (0.045)	-0.044 (0.050)	-0.024 (0.056)	-0.023 (0.062)	-0.024 (0.063)		-0.009 (0.028)	-0.059* (0.041)	-0.035 (0.041)	-0.049 (0.047)	-0.065 (0.050)
2		0.029 (0.025)	0.030 (0.031)	0.041 (0.029)	0.040 (0.036)	0.039 (0.037)		0.009 (0.015)	-0.019 (0.022)	0.000 (0.018)	-0.015 (0.024)	-0.020 (0.024)
3		0.038 (0.023)	0.043 (0.028)	0.044* (0.025)	0.049 (0.031)	0.049 (0.031)		0.026* (0.015)	0.015 (0.019)	0.020 (0.015)	0.017 (0.019)	0.011 (0.019)
4		0.046* (0.023)	0.055** (0.027)	0.050** (0.024)	0.059** (0.028)	0.059** (0.028)		0.040*** (0.013)	0.028 (0.016)	0.036** (0.013)	0.029* (0.016)	0.024 (0.016)
5		0.041 (0.026)	0.046 (0.028)	0.044 (0.026)	0.049* (0.028)	0.049* (0.028)		0.033** (0.014)	0.017 (0.017)	0.031** (0.014)	0.018 (0.017)	0.013 (0.017)
Youngest Child				-0.016 (0.023)	-0.014 (0.024)	-0.013 (0.024)				-0.007 (0.015)	-0.005 (0.015)	-0.004 (0.015)
Poor Health						-0.154*** (0.027)						-0.191*** (0.025)
Education:												
College	-0.034 (0.029)	-0.033 (0.029)	-0.033 (0.029)	-0.033 (0.029)	-0.033 (0.029)	-0.031 (0.029)	-0.020 (0.022)	-0.024 (0.023)	-0.022 (0.022)	-0.023 (0.023)	-0.022 (0.022)	-0.015 (0.022)
Trade School	-0.067** (0.032)	-0.066** (0.032)	-0.067** (0.032)	-0.067** (0.032)	-0.067** (0.032)	-0.058* (0.032)	-0.032 (0.022)	-0.034* (0.022)	-0.033* (0.021)	-0.034* (0.022)	-0.033* (0.021)	-0.026 (0.020)
Some University	-0.063* (0.038)	-0.062* (0.038)	-0.061 (0.038)	-0.062* (0.038)	-0.061* (0.038)	-0.056 (0.038)	-0.099*** (0.037)	-0.101*** (0.037)	-0.103*** (0.037)	-0.101*** (0.037)	-0.102*** (0.037)	-0.099*** (0.035)
Some College	-0.156*** (0.045)	-0.154*** (0.045)	-0.155*** (0.045)	-0.155*** (0.045)	-0.154*** (0.045)	-0.150*** (0.045)	-0.088** (0.049)	-0.090** (0.050)	-0.090** (0.049)	-0.092** (0.050)	-0.090** (0.049)	-0.085** (0.048)
Some Trade School	-0.321*** (0.047)	-0.321*** (0.047)	-0.322*** (0.047)	-0.321*** (0.047)	-0.322*** (0.047)	-0.310*** (0.047)	-0.086** (0.043)	-0.095*** (0.044)	-0.093** (0.044)	-0.097*** (0.045)	-0.094** (0.044)	-0.078** (0.042)
High School	-0.177*** (0.029)	-0.178*** (0.029)	-0.178*** (0.029)	-0.178*** (0.029)	-0.178*** (0.029)	-0.175*** (0.029)	-0.025 (0.020)	-0.028 (0.021)	-0.028 (0.021)	-0.028 (0.021)	-0.028 (0.021)	-0.020 (0.020)
Some High School	-0.288*** (0.032)	-0.285*** (0.032)	-0.286*** (0.032)	-0.286*** (0.032)	-0.287*** (0.032)	-0.275*** (0.032)	-0.121*** (0.027)	-0.122*** (0.028)	-0.123*** (0.027)	-0.122*** (0.028)	-0.123*** (0.027)	-0.103*** (0.026)
Elementary	-0.393*** (0.040)	-0.389*** (0.041)	-0.389*** (0.041)	-0.391*** (0.041)	-0.390*** (0.041)	-0.359*** (0.043)	-0.163*** (0.038)	-0.167*** (0.039)	-0.165*** (0.038)	-0.168*** (0.039)	-0.165*** (0.038)	-0.129*** (0.036)
R-sq	0.069	0.065	0.074	0.068	0.074	0.111	0.058	0.059	0.059	0.059	0.059	0.066
# obs :	5764	5764	5764	5764	5764	5764	5104	5104	5104	5104	5104	5104

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.
2. Standard errors are provided in parenthesis below the estimates.
3. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.

Table 8: Mean Hourly Wages by Brith Order and Sibsize

Birth Order	Panel A: Women						Panel B: Men					
	Sibling Size						Sibling Size					
	1	2	3	4	5	Total	1	2	3	4	5	Total
1	16.18 (0.83) 49	15.22 (0.53) 171	16.93 (0.80) 131	16.93 (1.11) 81	15.44 (0.68) 109	16.02 (0.34) 541	19.86 (1.21) 60	20.62 (0.85) 177	19.81 (0.75) 165	17.06 (0.79) 81	18.98 (0.84) 99	19.54 (0.40) 582
2		15.01 (0.62) 133	16.83 (0.90) 141	15.02 (0.67) 89	13.43 (0.78) 105	15.26 (0.39) 468		18.99 (0.69) 141	17.55 (0.61) 128	19.63 (0.84) 96	15.81 (0.63) 118	18.00 (0.35) 483
3			14.96 (0.65) 113	13.05 (0.58) 86	14.13 (0.77) 106	14.10 (0.39) 305			17.76 (0.88) 110	17.27 (0.79) 79	18.54 (0.71) 129	17.96 (0.46) 318
4				15.42 (0.83) 77	13.75 (0.72) 124	14.39 (0.55) 201				17.53 (0.75) 85	17.22 (0.57) 109	17.36 (0.46) 194
5					13.19 (0.34) 330	13.19 (0.34) 330					16.54 (0.43) 334	16.54 (0.43) 334
Total	16.18 (0.83) 49	15.13 (0.40) 304	16.31 (0.47) 385	15.05 (0.41) 333	13.76 (0.26) 774	14.85 (0.18) 1845	19.86 (1.21) 60	19.84 (0.56) 318	18.55 (0.44) 403	17.93 (0.40) 341	17.17 (0.27) 789	18.17 (0.19) 1911

Notes:

1. Each birth order/sibsize cell contains means, standard errors in parenthesis and number of observations from top to bottom

Table 9: Birth-order and Sibling Size Regressions on (ln) Hourly Wages

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.084* (0.045)		-0.014 (0.057)	0.075* (0.038)	0.024 (0.069)	-0.016 (0.059)	0.137*** (0.045)		0.030 (0.057)	0.037 (0.034)	0.013 (0.066)	0.064 (0.058)
2	0.033 (0.046)		-0.058 (0.059)		-0.034 (0.064)	-0.062 (0.060)	0.077* (0.045)		-0.028 (0.054)		-0.037 (0.059)	0.007 (0.056)
3	-0.015 (0.049)		-0.106* (0.059)		-0.091 (0.061)	-0.099* (0.060)	0.087* (0.049)		0.015 (0.055)		0.010 (0.056)	0.043 (0.056)
4	-0.008 (0.056)		-0.064 (0.063)		-0.056 (0.064)	-0.067 (0.064)	0.081* (0.049)		0.025 (0.054)		0.025 (0.054)	0.057 (0.056)
5	-0.055 (0.055)		-0.087 (0.057)		-0.082 (0.058)	-0.089 (0.059)	0.079 (0.059)		0.053 (0.062)		0.054 (0.062)	0.080 (0.063)
Sibling Size:												
1		0.197*** (0.071)	0.167** (0.081)	0.095 (0.088)	0.102 (0.10)	0.214 (0.181)		0.104 (0.078)	0.086 (0.086)	0.071 (0.093)	0.118 (0.103)	0.143 (0.155)
2		0.099** (0.045)	0.087 (0.058)	0.052 (0.050)	0.053 (0.066)	0.114 (0.139)		0.165*** (0.040)	0.176*** (0.051)	0.150*** (0.046)	0.193*** (0.060)	0.259** (0.114)
3		0.126*** (0.043)	0.139*** (0.053)	0.101** (0.044)	0.116** (0.058)	0.149 (0.108)		0.104*** (0.037)	0.110** (0.046)	0.093** (0.039)	0.121** (0.049)	0.20** (0.090)
4		0.088** (0.041)	0.105** (0.051)	0.072* (0.041)	0.089* (0.053)	0.112 (0.083)		0.094*** (0.035)	0.097** (0.041)	0.089** (0.036)	0.105** (0.043)	0.151** (0.069)
5		0.083* (0.049)	0.10* (0.054)	0.067 (0.050)	0.088 (0.056)	0.098 (0.068)		0.085** (0.040)	0.079* (0.043)	0.082** (0.041)	0.083* (0.044)	0.103* (0.056)
Youngest Child				0.041 (0.035)	0.042 (0.038)					0.000 (0.033)	-0.021 (0.037)	
Sibsex Variables	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-sq	0.115	0.117	0.122	0.12	0.122	0.128	0.117	0.123	0.126	0.124	0.126	0.141
# obs :	1845	1845	1845	1845	1845	1845	1911	1911	1911	1911	1911	1911

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.
2. Standard errors are provided in parenthesis below the estimates.
3. These regressions are run from the GSS9 data set.
4. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's and a GSS9 dummy variable.

Table 10: Birth-order and Sibling Size Regressions on Hourly wage Controlling for Education

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.021 (0.041)		-0.045 (0.056)	0.046 (0.037)	-0.027 (0.069)	-0.035 (0.056)	0.091** (0.042)		0.047 (0.054)	0.020 (0.031)	0.015 (0.061)	0.086 (0.055)
2	0.002 (0.044)		-0.065 (0.057)		-0.053 (0.063)	-0.055 (0.056)	0.055 (0.042)		0.005 (0.053)		-0.013 (0.056)	0.046 (0.053)
3	-0.056 (0.045)		-0.132** (0.056)		-0.125** (0.059)	-0.116** (0.056)	0.054 (0.048)		0.018 (0.052)		0.008 (0.054)	0.051 (0.054)
4	-0.027 (0.050)		-0.078 (0.057)		-0.074 (0.058)	-0.071 (0.057)	0.072 (0.046)		0.041 (0.051)		0.040 (0.051)	0.078 (0.053)
5	-0.065 (0.049)		-0.091* (0.052)		-0.089* (0.052)	-0.085 (0.052)	0.065 (0.057)		0.041 (0.059)		0.043 (0.060)	0.072 (0.060)
Sibling Size:												
1		0.088 (0.068)	0.079 (0.080)	0.028 (0.086)	0.049 (0.10)	0.219 (0.171)		0.018 (0.078)	-0.010 (0.085)	0.022 (0.091)	0.050 (0.10)	0.155 (0.153)
2		0.045 (0.042)	0.044 (0.056)	0.017 (0.047)	0.028 (0.066)	0.151 (0.130)		0.091** (0.036)	0.084* (0.047)	0.092** (0.042)	0.116** (0.056)	0.244** (0.112)
3		0.081** (0.041)	0.105** (0.053)	0.066 (0.043)	0.094 (0.058)	0.174* (0.102)		0.054 (0.037)	0.047 (0.045)	0.051 (0.037)	0.068 (0.047)	0.193** (0.089)
4		0.072* (0.039)	0.099** (0.049)	0.063 (0.039)	0.092* (0.052)	0.149* (0.079)		0.050 (0.033)	0.042 (0.038)	0.050 (0.034)	0.056 (0.041)	0.136** (0.067)
5		0.054 (0.048)	0.079 (0.053)	0.045 (0.050)	0.074 (0.055)	0.108* (0.065)		0.077** (0.038)	0.067 (0.041)	0.077** (0.038)	0.075* (0.042)	0.117** (0.053)
Youngest Child				0.022 (0.032)	0.020 (0.035)					-0.026 (0.032)	-0.039 (0.036)	
Education:												
College	-0.243*** (0.040)	-0.241*** (0.041)	-0.240*** (0.040)	-0.239*** (0.040)	-0.240*** (0.040)	-0.240*** (0.040)	-0.237*** (0.041)	-0.239*** (0.041)	-0.237*** (0.041)	-0.239*** (0.041)	-0.237*** (0.041)	-0.232*** (0.040)
Trade School	-0.397*** (0.043)	-0.393*** (0.044)	-0.394*** (0.044)	-0.391*** (0.043)	-0.393*** (0.043)	-0.396*** (0.044)	-0.250*** (0.038)	-0.248*** (0.038)	-0.248*** (0.038)	-0.249*** (0.038)	-0.250*** (0.038)	-0.237*** (0.037)
Some University	-0.199*** (0.048)	-0.20*** (0.048)	-0.193*** (0.048)	-0.20*** (0.048)	-0.192*** (0.048)	-0.188*** (0.048)	-0.245*** (0.067)	-0.251*** (0.067)	-0.249*** (0.067)	-0.253*** (0.067)	-0.249*** (0.067)	-0.240*** (0.066)
Some College	-0.415*** (0.067)	-0.413*** (0.069)	-0.410*** (0.068)	-0.410*** (0.068)	-0.410*** (0.068)	-0.414*** (0.068)	-0.40*** (0.096)	-0.402*** (0.098)	-0.401*** (0.097)	-0.403*** (0.097)	-0.402*** (0.096)	-0.399*** (0.096)
Some Trade School	-0.337*** (0.110)	-0.324*** (0.114)	-0.327*** (0.113)	-0.326*** (0.113)	-0.327*** (0.114)	-0.337*** (0.113)	-0.291*** (0.071)	-0.288*** (0.070)	-0.285*** (0.070)	-0.287*** (0.070)	-0.286*** (0.070)	-0.268*** (0.069)
High School	-0.416*** (0.039)	-0.418*** (0.039)	-0.418*** (0.039)	-0.415*** (0.038)	-0.417*** (0.039)	-0.414*** (0.039)	-0.357*** (0.038)	-0.355*** (0.038)	-0.353*** (0.038)	-0.355*** (0.038)	-0.354*** (0.038)	-0.351*** (0.037)
Some High School	-0.540*** (0.058)	-0.534*** (0.059)	-0.536*** (0.058)	-0.531*** (0.058)	-0.535*** (0.058)	-0.540*** (0.058)	-0.402*** (0.043)	-0.395*** (0.043)	-0.394*** (0.043)	-0.396*** (0.043)	-0.396*** (0.043)	-0.390*** (0.042)
Elementary	-0.717*** (0.060)	-0.713*** (0.059)	-0.713*** (0.058)	-0.710*** (0.060)	-0.714*** (0.058)	-0.710*** (0.056)	-0.557*** (0.061)	-0.548*** (0.061)	-0.546*** (0.061)	-0.551*** (0.061)	-0.548*** (0.061)	-0.550*** (0.060)
Sibsex Variables												
	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-sq	0.236	0.236	0.241	0.237	0.241	0.247	0.214	0.216	0.217	0.217	0.218	0.231
# obs :	1845	1845	1845	1845	1845	1845	1911	1911	1911	1911	1911	1911

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.
2. Standard errors are provided in parenthesis below the estimates.
3. These regressions are run from the GSS9 data set.
4. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.

Table A1: Means and Standard errors of Selected Variables from the GSS9 and GSS10 Surveys by Sex

Variable	Mean	
	Women	Men
<i>Respondent's Age:</i>		
25-29	0.16	0.17
30-34	0.20	0.20
35-39	0.20	0.19
40-44	0.18	0.17
45-49	0.15	0.15
50-54	0.12	0.11
<i>Province of Residence:</i>		
Newfoundland	0.02	0.02
Prince Edward Island	0.00	0.00
Nova Scotia	0.04	0.03
New Brunswick	0.03	0.03
Ontario	0.35	0.35
Quebec	0.27	0.27
Manitoba	0.04	0.04
Saskatchewan	0.03	0.03
Alberta	0.09	0.10
British Columbia	0.12	0.12
<i>Father's Education:</i>		
University	0.07	0.08
College	0.07	0.08
Some College	0.03	0.04
High School Graduate	0.13	0.15
Less Than High School	0.49	0.47
<i>Mother's Education:</i>		
University	0.04	0.04
College	0.11	0.09
Some College	0.03	0.03
High School Graduate	0.19	0.23
Less Than High School	0.48	0.43
Hourly Wage	14.85 (0.18)	18.17 (0.19)
GSS9 Dummy Variable	0.50	0.49
Employed	0.66	0.89

Notes:

1. Number of observations for females is 5764 and for males 5104 for all variables except hourly wages; observations for females for hourly wages 1845 for males 1911
2. Standard errors are provided in parenthesis below the means for hourly wages

Table A2: Birth-order and Sibsize Ordered Probit Regressions on Education using GSS9 Only

	Panel A: Women						Panel B: Men					
	1	2	3	4	5	6	1	2	3	4	5	6
Birth Order:												
1	0.261*** (0.093)		0.032 (0.110)	0.123* (0.070)	0.157 (0.124)	-0.058 (0.115)	0.242** (0.102)		-0.297** (0.131)	0.114 (0.072)	-0.237 (0.150)	-0.349*** (0.132)
2	0.154* (0.091)		-0.032 (0.107)		0.046 (0.112)	-0.116 (0.115)	0.066 (0.103)		-0.431*** (0.129)		-0.397*** (0.137)	-0.477*** (0.130)
3	0.092 (0.096)		-0.061 (0.109)		-0.014 (0.111)	-0.129 (0.114)	0.084 (0.113)		-0.270** (0.129)		-0.250* (0.132)	-0.302** (0.132)
4	0.143 (0.110)		0.068 (0.118)		0.087 (0.116)	-0.007 (0.125)	0.005 (0.120)		-0.269** (0.133)		-0.264** (0.133)	-0.30** (0.135)
5	0.097 (0.111)		0.052 (0.117)		0.063 (0.116)	-0.018 (0.120)	0.018 (0.129)		-0.057 (0.138)		-0.058 (0.137)	-0.074 (0.141)
Sibling Size:												
1		0.535*** (0.157)	0.512*** (0.170)	0.301 (0.189)	0.294 (0.205)			0.718*** (0.180)	0.857*** (0.195)	0.474** (0.211)	0.745*** (0.232)	
2		0.245*** (0.087)	0.252** (0.103)	0.147 (0.098)	0.136 (0.122)			0.585*** (0.085)	0.794*** (0.108)	0.482*** (0.097)	0.734*** (0.126)	
3		0.275*** (0.073)	0.303*** (0.088)	0.226*** (0.077)	0.230** (0.097)			0.358*** (0.080)	0.537*** (0.10)	0.302*** (0.082)	0.499*** (0.106)	
4		0.135* (0.071)	0.146* (0.082)	0.107 (0.071)	0.10 (0.086)			0.403*** (0.086)	0.567*** (0.10)	0.372*** (0.088)	0.543*** (0.105)	
5		0.151* (0.089)	0.145 (0.095)	0.124 (0.090)	0.109 (0.097)			0.138 (0.086)	0.249*** (0.095)	0.120 (0.087)	0.235*** (0.097)	
Youngest Child				0.145** (0.068)	0.147** (0.075)					0.164** (0.076)	0.075 (0.083)	
Sibsex Variables	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-sq	0.059	0.061	0.062	0.062	0.062	0.065	0.064	0.074	0.077	0.075	0.077	0.08
# obs :	2833	2833	2833	2833	2833	2833	2460	2460	2460	2460	2460	2460

Notes:

1. Estimates denoted with *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively, using a t-test.
2. Standard errors are provided in parenthesis below the estimates.
3. These regressions are run from the GSS9 data set.
4. Control Variables included in the above regressions that are omitted from the above table include, respondent's age, respondent's province of residence, Mother's and Father's Education and a GSS9 dummy variable.