Gender Specialization in Households: An Empirical Analysis of Human Capital Transmission*

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Abstract

This paper presents a cohort analysis of the relationship between educational attainment of parents and children and how it is affected by maternal employment. Our specification allows for gender heterogeneity and unobserved ability. We find same-gender specialization, paternal education matters more for sons and maternal education matters more for daughters, for the most recent cohorts. We also find more intense gender specialization in households with working mothers. Our results also suggest increasing same-gender specialization for the cohorts born after 1955, a period of impressive growth in married female employment. More specifically, we find a sharp decline in the effect of maternal education on the attainment of sons, not present on daughters' educational attainment.

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1 Introduction

Whose education matters more for the educational attainment of children: the father's or the mother's? Does the father's education affect the educational attainment of sons and daughters equally? And the mother's? This paper conducts a cohort analysis of the relation between the educational attainment of parents and children, with a special emphasis on gender differences.

Using micro data from the General Social Survey (GSS), we classify all respondents who reported the educational attainment of both parents by year of birth. Next, we regress the respondent's years of education on the years of education attained by their fathers and mothers, as well as a number of other socio-demographic controls. We allow for parameter heterogeneity by gender and birth cohort of the respondent.

We find a sharp decline in the effect of maternal education on the attainment of sons for the cohorts born since 1955. In contrast, the effect of maternal education on daughters over the same time period remained fairly constant. Over the period considered, the effect of paternal education increased mildly both for sons and for daughters. Overall, our results show that for the cohorts born after 1955, paternal education matters more for sons and maternal education matters more for daughters, suggesting increasing same-gender specialization in households since 1955.

Furthermore, we provide evidence linking the increasing gender specialization to the dramatic expansion in the labor force participation of married women with children in the US since 1960. More specifically, we find that in households where the mother worked, gender specialization is larger than in traditional households, where the mother stayed at home. We note that our results are robust to the presence of hereditary unobserved ability.

Our findings are of interest to the studies of household resource allocation. In an attempt to enhance the understanding of the economic role of families, a recent trend in Macroeconomics explicitly allows for heterogeneous roles for fathers and mothers. Models with this feature have been used to study household labor supply (Greenwood et al 2002, Fernandez et al 2002, Jones et al 2003), educational attainment (Rios-Rull and Sanchez-Marcos 2003), asset accumulation (Imrohoroglu et al 2003), and income inequality (Kremer 1997, Fernandez and Rogerson 2001).

Our paper is closely related to a large body of literature in Labor economics that attempts to estimate the (direct) effects of parental education on the educational attainment of children. Despite the large amount of research, there is a lack of consensus about the (relative and absolute) contribution of each parent to the educational attainment of children. In a comprehensive survey of the literature, Haveman and Wolfe (1995) conclude that most authors find maternal education to have a larger effect on the attainment of children. However, in a recent and provocative contribution, Behrman and Rosenzweig (2002) find that the father's education matters more than the mother's. On top of that, their results suggest that maternal education has no (direct) effect on the education of children.

Our findings uncover important changes over time in the relative contributions of parental education, which have often been overlooked in the previous work, and lead us to believe that accounting for cohort differences helps identifying the contribution of each parent's education to the attainment of children.

Several approaches have been proposed to control for unobservable ability. These papers can be classified in four categories. One approach uses test scores of young children as a proxy for ability (Cameron and Heckman 2001, Bernal 2003). A second approach uses instrumental variable estimation. Currie and Moretti (2003) use data on college availability as an instrument for maternal education. Instead, Chevalier (2003) and Black et al (2003) instrument parental education using changes in compulsory schooling laws, in a similar fashion to Acemoglu and Angrist (2000), who use the same approach to estimate the social returns to education. A third approach is the within-twin estimator proposed by Behrman and Rosenzweig (2002), who use a sample of identical twins. Finally, Plug (2002) uses data from adoptees to control for unobserved ability. These approaches require very detailed data, not available for long periods of time.

Our focus on a long time span has led us to use the General Social Survey, which provides information on the educational levels of parents and children for many cohorts but lacks data that can be used to control for unobserved ability. To deal with this problem, we develop estimators of parental gender specialization that are consistent even in the presence of hereditary unobserved ability.

The structure of the paper is as follows. After a brief review of the literature in section 2, we do our cohort analysis of parental education, ignoring the presence of unobserved ability (section 3). In section 4, we construct a simple model of educational attainment, derive our estimators of gender specialization and show that the findings in section 3 are robust to the presence of unobserved ability. Section 5 investigates the consequences of maternal employment for gender specialization. Section 6 extends the analysis to earlier cohorts and provides interpretation for our results. Section 7 concludes. The appendix contains sensitivity analysis and a brief summary of data on the evolution of female labor force participation.

2 Who matters more? A cohort analysis

We are interested in the effects of parental education for the educational attainment of the US cohorts born after 1935. In particular, we would like to know whose parent's education is more decisive in the education of children: the father's or the mother's, and whether there are differences in parental roles by gender of the child.

To carry out the exercise, we construct a dataset of microdata using the GSS, as described below. We classify individuals in 5-year (birth) cohorts and fit the following regression cohort by cohort. The two regressions below are estimated using, respectively, the subsample of males (sons) and the subsample of females (daughters) belonging to cohort t. Thus, for individuals of gender $g = s, d$ (for sons and daughters) born in year t, we estimate

$$educ_i = \beta_0^{s,t} + \beta_p^{s,t} paeduc_i + \beta_m^{s,t} maeduc_i + \beta^{s,t} Z_i + \varepsilon_i, \text{ for } i = 1, ..., n_{s,t} \tag{1}$$

$$educ_i = \beta_0^{d,t} + \beta_p^{d,t} paeduc_i + \beta_m^{d,t} maeduc_i + \beta^{d,t} Z_i + \varepsilon_i, \text{ for } i = 1, ..., n_{d,t}, \tag{2}$$

where $educ_i$ is the years of education of individual i. Respectively, $paeduc_i$ and $maeduc_i$ stand for the years of education of individual i's father and mother, and Z_i is a vector of family characteristics that includes variables such as the number of siblings. This is essentially the regression model in Card and Lemieux (2000), however we allow for greater heterogeneity in the coefficients of the regression. In particular, we allow the coefficients of parental education to vary across cohorts and genders.[1] Note that all coefficients are allowed to vary across cohorts and genders. The birth cohorts considered are $t = 1935 - 39, ..., 1965 - 69$. Prior to showing the estimation results, we

[1] Similar regressions have been estimated in Kremer (1997), Fernandez and Rogerson (2001) - using the PSID -, and Fernandez, Fogli and Olivetti (2002) - using the GSS.

provide some summary statistics of the sample.

2.1 Data

Our data source is the General Social Survey (GSS), 1972-2000. We pool together all individuals surveyed in the different waves that reported their educational attainment (years of completed education) and the educational attainment of *both* of their parents. In addition, we restrict our sample to individuals who were at least 25 years old at the time of the interview. The reason is that we want to allow respondents to have had enough time to complete their 'desired' level of education.[2] Then we classify individuals by their year of birth, independently of when they were interviewed. In order to increase the density of observations in each cell, we construct 5-year cohorts.

Tables 1.1 and 1.2 report descriptive statistics for our sample, by gender and cohort. We report sample means and standard deviations for birth cohorts 1935-1969. Observe first that the average age *at the time of the interview* is decreasing by year of birth cohort. For the individuals in our sample, the average years of education of their fathers and mothers (paeduc and maeduc) are strictly increasing across cohorts. The same is not true, however, about the average years of education of the respondents. For males, average educational attainment increased monotonically from around 11 years for the 1910-14 cohort up to 14.20 years for the 1945-49 cohort. However, birth cohorts 1950-54 and 1955-59 experienced a drop in their average education, relative to the preceding cohorts.[3] In fact, the average educational attainment of males born in 1965-69 was 14.10

[2]One may worry that a fraction of the population may not have completed their desired education by age 25. We tackle this question a bit later.

[3]This fact is well known in the literature. See, for instance, Card and Lemieux (2000) for an account using different data sources.

years, below the attainment of the 1945-49 cohort. For females, educational attainment did not drop but it slowed down, close to stagnation, for the cohorts 1950-54 to 1960-64.

We also report the correlation coefficient between the years of education of the respondent and those of each of the parents. Observe that the four correlations are quite high, on average above 0.4. The correlation with maternal education ranges from 0.37 to 0.50, while the correlation with paternal education ranges from 0.30 to 0.50. The correlation between the education of husbands and wives is very high and quite constant across cohorts, ranging from 0.50 to 0.70.[4]

An important observation that stands out from these statistics is how similar they are for the subsamples of men and women. This is natural given that the gender of the children can be thought of as being exogenous to a given family. This observation will play an important role later on.

Tables 6.1 and 6.2 report the same statistics as tables 1.1 and 1.2, but for the sample of individuals aged 30 or above at the time of the interview. It is interesting to point out that the average educational attainment of the cohorts in this sample is remarkably similar to that of the younger sample. In particular, let us note that the average educational attainment of the latest cohorts is practically the same for both subsamples. This observation suggests that educational attainment at age 25 (at interview) is a reasonable measure of 'final' educational attainment. In any case, we will check the sensitivity of our results by using this alternative sample.

2.2 Regression estimates

We estimate regression (1) and (2) using the previously described sample. The estimates are summarized in tables 2.1 and 2.2 and figures 1.1-1.3.

[4] For more on marital sorting in the U.S., see Mare (1991).

Let us start with *paternal education.* First of all, observe that the father's education has a larger effect on sons than on daughters. In figure 1.1, the coefficient on paternal education is larger for sons than for daughters in all cohorts (except the first one). We shall refer to this feature as *paternal specialization* (on sons) and use the difference between the coefficients for sons and daughters to measure it. The figure shows a small but persistent paternal specialization across all generations (not significant at the usual significance levels). We also note an upward trend in the influence of the father's education both on sons and daughters. The estimated coefficients, for both genders, start at 0.12 for the 1935-39 cohort and end up at 0.20, for daughters, and at 0.23 for sons.

Let us turn now to *maternal education.* Figure 1.2. shows a striking difference in the evolution of the maternal role, depending on the child's gender. While the maternal role has remained quite constant for daughters (at around 0.2), it displays a clear downward trend for sons, accelerating for the 1950-54 and following cohorts. The coefficient of maternal education for sons has dropped from 0.20 to 0.05 in the time period considered. Does maternal education have a larger effect on the education of sons or on the education of daughters? For cohorts born before 1950, the mother's education has an indistinguishable effect on sons and daughters. However, for the children born in the 1950s or afterward, the mother's education has played a bigger role in the educational attainment of daughters than on the attainment of sons. Define now *maternal specialization* (on daughters) as the difference between the coefficients on daughters and sons. Then figure 1.2 features increasing maternal specialization for all cohorts born after 1955. Note that for the cohorts born in the 1960s, there is a significant degree of maternal specialization (at the usual significance levels). Taken together, figures 1.1 and 1.2, point to a situation of (same) gender specialization within

American households for the cohorts born after 1955.

Figure 1.3 contains the estimated intercepts, which take values around nine (years of education), which can be interpreted as the years of compulsory education.[5] It is worth pointing out that the estimated intercepts are higher for men than for women, which suggests that the intercept also captures differences in the perceived returns to schooling for men and women.

The appendix contains sensitivity analysis of these results. Mainly, we carry out two exercises. First, we run again the same regressions but on a sample containing only those individuals who were at least thirty years old at the time of the interview. Second, we argue that even if the true relationship between educational attainment of parents and children is a nonlinear function, the gender asymmetry still arises. We make this point by estimating a series of probit models by gender and cohort. In general, the two earlier findings are confirmed.

3 Household production of human capital

This section discusses the empirical evidence on the consequences of ignoring unobserved ability. We also provide a simple model, where unobserved ability is explicitly considered, and derive an estimator that will be used to investigate a hypothesis for the gender asymmetry in the effect of maternal education.

3.1 Unobserved ability

The literature on family background and educational attainment has provided abundant evidence supporting that the estimators for parental education in the above regressions are likely to be

[5] Acemoglu and Angrist (NBER) use changes in compulsory laws to estimate the private and social returns to schooling in the US.

biased. Behrman and Rosenzweig (2002) point out that to the extent that ability is genetically transmitted and not accounted for in the regression, two types of bias affect least-squares estimates of the effects of parental education on educational attainment. Having a highly educated mother is associated to being high ability for two reasons. First, a high-education mother is likely to signal a high-ability mother, and hence, a high-ability child through genetic transmission (ability bias). On top of that, a high-education mother is likely to have married a high ability man. Again, genetic transmission of ability makes it more likely that the child is high ability (marital sorting bias).

Using data on identical twins, Behrman and Rosenzweig (2002) propose a within-twin estimator that allows for an unbiased estimation of the effect of maternal education in the presence of unobserved ability.[6] They conclude that maternal education has virtually no effect on children's educational attainment.[7] Their interpretation is that despite the benefits from being born to a more educated mother, given that education and labor force participation are positively correlated, it is likely that a more educated mother will spend more time working (outside the home), and the two effects may offset each other. Their results also suggest that OLS estimates are substantially upwardly biased.

We lack any information that can be used to control for unobserved ability in our dataset so our earlier OLS estimates are possibly biased for the reasons outlined above. However, in this section we provide an estimator of the *gender differences* in the effects of the education of each parent that is consistent *even* in the presence of unobserved ability.

[6] Their dataset contains 424 female (identical) twins and 244 male (identical) twins born in Minnesota between 1936 and 1955.

[7] Unfortunately they do not report the results separately by gender of the children. Antonovics and Goldberger (2003) point out some problems in data construction in Behrman and Rosenzweig (2002) and redo the analysis. The conclusion that paternal education plays a larger role than maternal education remains unchanged.

3.2 A simple model

An important lesson from the literature on educational attainment and family background is that unobserved ability cannot be ignored when estimating the effects of parental education. To be explicit about the role of unobserved ability, we construct a simple model and use it to derive consistent estimators of the *gender differences* of the effects of parental education. Despite its reduced form, the model provides primitives for the regressions reported in the previous section.

We have in mind a setup where each individual, say in her teens, chooses her total years of education. Her choice depends on her ability and her family's income, as well as other family characteristics. In addition, her choice and the choices of all individuals in the same cohort are also affected by features of the macroeconomic environment, such as the returns to schooling and the returns to alternative uses of time.

In the model, parental education has two main functions. First, it is a determinant of family income, which is an important input in ability formation. Children born in families with high income receive better early education and better health care. We shall assume that a child benefits equally from a high family income regardless of her gender. We also consider an additional function of parental education in the development of children. It determines the child's preferences over education, for instance by affecting their personal goals and aspirations. In this process, it is possible that gender effects are present. That is to say, it may be that a female child who is raised in a household where only the mother is college-educated is more likely to want to get a college degree herself than if she grew up in a household where only the father was college educated. In other words, the exact distribution of education over the parents may matter in shaping children's preferences over education, and hence, the educational choices of male and female children.

Let us now introduce a bit of notation. Let the family background of a generic individual i be summarized by the years of education and ability levels of each parent - for the father, $(y_{p,i}, h_{p,i})$, and for the mother, $(y_{m,i}, h_{m,i})$ -, together with a vector of sociodemographic characteristics, Z_i.[8] In short, an individual's family background is given by

$$(y_{p,i}, h_{p,i}, y_{m,i}, h_{m,i}, Z_i).$$

Children inherit some ability from their parents according to

$$h_i = b_p h_{p,i} + b_m h_{m,i}$$

We assume the process of (hereditary) transmission of ability between parents and children to be the same across all genders and birth cohorts.

Individual education outcomes are supposed to depend on family background, family income (I_i) and own ability (h_i). More specifically, the years of education of an individual i, born in cohort t, of gender $g = s, d$ are given by

$$y_i = \beta_0^{g,t} + a_p^{g,t} y_{p,i} + a_m^{g,t} y_{m,i} + a_I^t I_i + \beta_Z^{g,t} Z_i + h_i + u_i,$$

where u_i is an idiosyncratic shock. All individuals of the same gender belonging to the same cohort are supposed to behave according to the same rule. Individual heterogeneity in educational attainment thus results from differences in family background, differences in unobserved ability and different values of idiosyncratic shock u_i.

[8] We shall use subindex p to denote paternal variables. Similarly, subindex m will denote maternal variables.

As argued, parental education can be interpreted as shaping children's preferences over education. An alternative interpretation is that parents can increase the ability of their children by spending time with them and the productivity of this investment may increase in their levels of education. Bernal (2003) follows this route.[9]

Family income also affects educational attainment. A new wave of research in labor economics suggests it is during childhood that family income plays the key role in (total) educational attainment (Keane and Wolpin, 2001, and Cameron and Heckman, 2001). Family income is not reported in the GSS, and even if it were, it is always the case that only noisy measures of it are available. We assume that family income is given by

$$I_i = R^{p,t} y_{p,i} l_{p,i} + R^{m,t} y_{m,i} l_{m,i},$$

where $l_{p,i}$ are the hours worked by the father, $y_{p,i} l_{p,i}$ are the efficiency units of labor supplied by the father, and $R^{p,t}$ is the price per efficiency unit of paternal labor.[10] The maternal variables are defined analogously. Observe that more educated parents, for given hours worked, earn higher income. We shall make the following assumptions:

$$l_{p,i} = g(R^{p,t}), \text{ for all } i$$

$$l_{m,i} = g(R^{m,t}), \text{ for all } i.$$

That is, each parent's labor supply is a function g of the going rate of return for labor. To the extent that rates of return vary over time, parental labor supply and family income will vary over

[9]Her paper also contains an excellent review of the literature. To read more on the determinants of ability, Cameron and Heckman (2001) is another good reference.

[10]We interpret $\beta_0^{s,t}$ as the returns to education expected by male individuales born in cohort t, whereas $R^{p,t}$ is the going rate of return per unit of effective labor of the fathers of the individuals born in cohort t.

time. In addition, we assume that the effect of family income in educational attainment does *not* depend on the gender of the individual. This will be an important (identifying) assumption.

Combining all the previous expressions, the years of education of individual i, belonging to cohort t, of gender g are given by

$$y_i = \beta_0^{g,t} + \left[a_p^{g,t} + a_I R^{p,t} g(R^{p,t})\right] y_{p,i} + \left[a_m^{g,t} + a_I^t R^{m,t} g(R^{m,t})\right] y_{m,i} + \beta_Z^{g,t} Z_i + h_i + u_i,$$

and by defining

$$\beta_p^{g,t} = a_p^{g,t} + a_I^t R^{p,t} g(R^{p,t})$$

$$\beta_m^{g,t} = a_m^{g,t} + a_I^t R^{m,t} g(R^{m,t}),$$

we obtain

$$y_i = \beta_0^{g,t} + \beta_p^{g,t} y_{p,i} + \beta_m^{g,t} y_{m,i} + \beta_Z^g Z_i + h_i + u_i. \tag{3}$$

3.3 Estimation

Equation (3) provides an interpretation to the coefficients of regressions (1) and (2). In particular, observe that in our model the coefficients of parental education may vary across cohorts for a number of reasons. For instance, differences across cohorts in the returns to labor faced by parents will affect their division of labor between work (outside the home) and time at home. Another source of variation across cohorts can be given by changes over time in the mapping from parental education to the child's preferences over education, say as a result of changes in parents' views over how much education their sons and daughters should get, which may reflect, for instance, social attitudes toward gender discrimination in the labor market. These provide interpretations for why our earlier (possibly biased) OLS estimates of regressions (1) and (2) changed across cohorts.

3.3.1 Estimation under observed ability

Let us assume that individual ability were observable and suppose that each set of individual observations of the same gender and cohort, say (g,t), $\{(y_{p,i}, y_{m,i}, Z_i, h_i)\}_{i=1}^{i=n_{g,t}}$ is a random sample, that is, all observations are independently drawn from a common distribution.

Define the OLS estimators of regression (3) by adding 'hats' to the coefficients. Clearly, if ability were observed, OLS estimators would be unbiased and consistent under standard assumptions. Let variables without subindex i denote the column vectors of dimension $n_{g,t}$ that result from stacking the individual observations. In this fashion, we define vectors $y_p^{g,t}$, $y_m^{g,t}$, $Z^{g,t}$, $h^{g,t}$, $u^{g,t}$, and $e^{g,t}$, which is a column vector of ones of dimension $n_{g,t}$. Construct matrix $M^{g,t}$ by stacking together the previous vectors ordered as follows: $M^{g,t} = (e^{g,t}, y_p^{g,t}, y_m^{g,t}, Z^{g,t}, h^{g,t})$. We shall assume that for each pair (g,t), $E[u^{g,t}|M^{g,t}] = 0$ and $\lim_{n_{g,t}\to\infty} \frac{(M^{g,t})' M^{g,t}}{n_{g,t}}$ is a real-valued positive definite matrix. Under these assumptions, least-squares estimators of regression (3) are unbiased and consistent.

3.3.2 Estimation under unobserved ability

Let us now turn to the case of unobserved ability. Clearly, OLS estimators will, in general, be biased. However, in our setup, we know the exact form of the bias, a fact that will prove useful below.

Let us introduce some matrix notation. As before, for each cohort and gender pair (g,t), define

$$X^{g,t} = (e^{g,t}, y_p^{g,t}, y_m^{g,t}, Z^{g,t}),$$

a matrix with $n_{g,t}$ rows. Define also coefficient vectors

$$\beta^{g,t} = \begin{pmatrix} \beta_0^{g,t} \\ \beta_p^{g,t} \\ \beta_m^{g,t} \\ \beta_Z^{g,t} \end{pmatrix} \text{ and } b = \begin{pmatrix} b_p \\ b_m \end{pmatrix},$$

matrix $H^{g,t} = (h_{p,i}^{g,t}, h_{m,i}^{g,t})$, with $n_{g,t}$ rows and two columns, and $u = (u_i)$, the vector of idiosyncratic shocks. We can now express regression (3) as

$$y^{g,t} = X^{g,t}\beta^{g,t} + \varepsilon^{g,t}, \tag{4}$$

where $\varepsilon^{g,t} = H^{g,t}b + u$, for each pair (g,t). The least-squares estimator of this regression is given by

$$\widehat{\beta}^{g,t} = \left(\left(X^{g,t}\right)' X^{g,t} \right)^{-1} \left(X^{g,t}\right)' y^{g,t}.$$

For the following result, let us assume that each set of individual observations with gender and cohort (g,t), that is, $\{(y_{p,i}, y_{m,i}, Z_i, h_i)\}_{i=1}^{i=n_{g,t}}$ is a random sample. We also assume that for each pair (g,t), $E[u^{g,t}|X^{g,t}] = 0$ and $\lim_{n_{g,t}\to\infty} \frac{\left(X^{g,t}\right)' X^{g,t}}{n_{g,t}}$ is a real-valued positive definite matrix.

Please note that even under these assumptions, the hereditary transmission of ability implies that, in general, $\widehat{\beta}^{g,t}$ is a *biased* estimator of $\beta^{g,t}$. Specilically, the OLS estimator is the sum of true value of $\beta^{g,t}$ and the ability-bias term;

$$\widehat{\beta}^{g,t} = \beta^{g,t} + (X^{g,t\prime}X^{g,t})^{-1}X^{g,t\prime}H^{g,t}b.$$

The ability-bias term depends on the sample (and thus the gender of respondents)used for the estimation. However, if the family background (within a cohort) is drawn from the same distribution regardless of respondent's gender, the ability-bias term (which depends only on the family background) are common for sons and daughters in the limit. Hence, we can provide the following result.[11]

Proposition. *For all cohorts, suppose that the family background of all individuals in the same cohort is drawn from the same distribution, regardless of gender, and that the ability-bias term is common and finite for sons and daughters in the limit, that is,*

$$\lim_{n_{s,t}\to\infty}(X^{s,t\prime}X^{s,t})^{-1}X^{s,t\prime}H^{s,t}b = \lim_{n_{d,t}\to\infty}(X^{d,t\prime}X^{d,t})^{-1}X^{d,t\prime}H^{d,t}b < \infty.$$

Then, $\widehat{\beta}_k^{s,t} - \widehat{\beta}_k^{d,t}$ is a consistent estimator of $a_k^{s,t} - a_k^{d,t}$.

Proof. The OLS estimator is;

$$\widehat{\beta}^{g,t} = \beta^{g,t} + (X^{g,t\prime}X^{g,t})^{-1}X^{g,t\prime}H^{g,t}b.$$

Under the assumption on the ability-bias term, we have

$$p\lim\left(\widehat{\beta}^{s,t} - \widehat{\beta}^{d,t}\right) = \beta^{s,t} - \beta^{d,t}.$$

And now we can use the definitions for the coefficients in $\beta^{g,t}$ from equation (3) to arrive to the desired expressions. Q.E.D.

Observe that, as already argued, identification of $a_k^{s,t}$, the effect of parent k's education on the educational attainment of children is impossible with our data. Hence, we shall remain silent about the levels or time trends in figures 1.1 and 1.2. However, the previous result states that we can identify the *gender differences* of the effects of each parent's education. In the light of this result, let us now give another look at our previous estimates.

[11] This is an application of what Goldberger (1991) refers to as "short regressions." We thank Giorgio Topa for pointing this out.

Define maternal specialization (on daughters) for birth cohort t by

$$MS_t = \widehat{\beta}_m^{d,t} - \widehat{\beta}_m^{s,t}.$$

Similarly, define paternal specialization (on sons) for birth cohort t by

$$PS_t = \widehat{\beta}_p^{s,t} - \widehat{\beta}_p^{d,t}.$$

And we shall refer to both types of specialization as household *gender specialization*

Figure 1.4 plots the evolution of gender specialization across the different cohorts. Two features stand out. The sharp increase in maternal specialization for the cohorts born since 1955 and the relatively small constant degree of paternal specialization across all cohorts. The analysis in this section has shown that these two results are not likely to be driven by the inability to control for unobserved ability. The next section attempts to provide an explanation for the gender-asymmetric evolution of the effect of maternal education.

4 Working mothers

Important changes have occurred in the time allocation of American households since 1960. Arguably, the most important has been the large increase in the labor force participation of married women, which had been rising since the 1920s but accelerated substantially in 1960. Female labor force participation in 1980 was 56%, up from 26.7% in 1960 (table 3.1). Goldin (1990) has argued that this increase reflects the changes in female labor supply of younger married women. McGrattan and Rogerson (1998) find that the weekly hours worked by females with small children increased dramatically, from 5.75 in 1960 to 19.48 in 1990.

It is quite possible, we conjecture, that maternal employment (and the resulting resource reallocation within households) affected the traditional channel of transmission of human capital from parents to children. Some researchers have found that maternal employment during early childhood slows down the cognitive development of children (Bernal, 2003), which is known to be an important determinant of educational attainment (Cameron and Heckman, 2001). On the other hand, maternal employment also has positive effects on the well being of children. A child born in a two-parent family where both parents work will presumably enjoy the benefits of a larger family income. In addition, a large body of literature in sociology studies how parental work during one's childhood shapes children's attitudes toward school and work.

In the next section we use the data on maternal employment contained in the GSS to study its effects on the pattern of gender specialization within households. For a limited number of waves, the GSS asked the question "Did your mother work at least one year after you were born and before you started first grade?".[12]

4.1 The effects of maternal employment

Suppose there is two types of households, indexed by $w = 0, 1$. In households with $w = 1$, the mother is employed. In households with $w = 0$, the mother is not employed. The purpose of this section is to examine if parental specialization differs among households with different maternal work status.

Ideally, we would like to carry out the estimation allowing for heterogeneous coefficients by mother's work status and by birth cohort. Unfortunately, we do not have enough observations to

[12]This is variable MAWKBORN in the GSS codebook. This variable has been used also by Fernandez, Fogli and Olivetti (2002). All respondents were born after World War II.

do that and we need to impose restrictions on the coefficients. We introduce cohort dummies but assume that parental education coefficients do not differ by birth cohort. We only use individuals born after 1950 in the estimation. More specifically, the model we estimate is

$$y_i = \beta_0^{g,t} + \beta_p^{g,w} y_{p,i} + \beta_m^{g,w} y_{m,i} + \beta_Z Z_i + \varepsilon_i. \tag{5}$$

Let us adapt now the previous estimators of paternal and maternal specialization to incorporate differences in maternal work status. Respectively,

$$PS_w = \widehat{\beta}_p^{s,w} - \widehat{\beta}_p^{d,w}$$

$$MS_w = \widehat{\beta}_m^{d,w} - \widehat{\beta}_m^{s,w},$$

where $w = 0$ indicates that the mother did not work (outside the home) and the opposite for $w = 1$. Invoking the previous proposition, it is easy to see that these estimators are consistent under the assumption of a common distribution for the four subsamples $(g, w) \in \{s, d\} \times \{0, 1\}$. It is important to note that we are *not* assuming that, for a given gender, individuals with a working mother and with a non-working mother were sampled from the same distribution.[13]

Let us proceed now to the estimation of model (5). In this case estimating the model jointly for both types of households is more convenient. To do so, it will be useful to define a female dummy variable, Fem_i, which takes value 1 when individual i is a female (and zero otherwise) and dummy

[13] Bernal (2003) provides convincing evidence against this assumption.

variable w_i, which takes value 1 when the mother was employed. We can now rewrite (5) as

$$\begin{aligned} y_i &= (c_{0,t} + d_{0,t} Fem_i) \\ &\quad + (c_p + d_p Fem_i + e_p w_i + f_p Fem_i w_i)\, y_{p,i} \\ &\quad + (c_m + d_m Fem_i + e_m w_i + f_m Fem_i w_i)\, y_{m,i} + \beta_Z Z_i + \varepsilon_i. \end{aligned}$$

It is easy to see that the parameters of interest for the estimation of parental gender specialization are

$$PS_{w=0} = -d_p, \quad PS_{w=1} = -d_p - f_p$$

$$MS_{w=0} = d_m, \quad MS_{w=1} = d_m + f_m.$$

Table 4.1 presents our estimates of the regression parameters and table 4.2 reports the estimated values for parental gender specialization for each type of household. We find that

$$\widehat{PS}_{w=0} = 0.057, \quad \widehat{PS}_{w=1} = 0.152$$

$$\widehat{MS}_{w=0} = 0.065, \quad \widehat{MS}_{w=1} = 0.117,$$

that is, when the mother works both paternal specialization and maternal specialization increase substantially (duplicate or triplicate). In table 4.2 we also report the results of a number of significance tests. Using the F-test for testing hypothesis about linear combinations of parameters, we test for parental specialization, in particular, we test (separately) the following four (null) hypotheses: $MS_{w=0} = 0$, $MS_{w=1} = 0$, $PS_{w=0} = 0$ and $PS_{w=0} = 0$. The results confirm that both paternal and maternal specification are significant in households with a working mother (at the usual 5% significance level), while they are not for the other type of households.[14]

[14] As sensitivity analysis, we have also estimated our model on more homogeneous subsamples, born in the same

4.2 Interpretations

4.2.1 Working mothers as role models for daughters

Figure 1.4 shows an increase in maternal specialization and a constant degree of paternal specialization for the cohorts born after 1955. Here is a conjecture based on the fact that maternal employment accelerated between 1960 and today. As mothers left the home to find employment, children had to spend more time with other care takers, such as nannies or grandparents. As a result, the influence of maternal education on the educational outcomes of children generally decreased (both for sons and for daughters). However, the example of a working mother may have had an important motivational effect on daughters that effectively increased the *taste for education* and employment of those daughters with working mothers. As a result, the correlation between maternal education and sons' education would have fallen, while it would have remained constant or even increased for daughters. Fernandez, Fogli and Olivetti (2002) argue (theoretically and empirically) that maternal employment can have an effect on children's preferences. In their analysis of the marriage market, sons of working mothers develop a taste for women who work.

4.2.2 Comparative advantage in parenting

We found that in households where the mother worked outside the home, parental gender specialization is larger, both paternal specialization (on sons) and maternal specialization (on daughters). Here follows an interpretation of the results. When mothers take on employment outside the home, it is plausible to expect that the *total* time that parents can spend with their children is somewhat reduced. Suppose that fathers have a *comparative advantage* at educating sons and mothers have

5-year cohort. We also find evidence of gender specialization in families with a working mother, although the evidence is weaker due to the smaller number of observations.

it at educating daughters. An optimal response to the reduction in total time might entail gender specialization, that is, the father spending his time with the son and the mother spending her time with the daughter. As a result, the fraction of households with high gender specialization would have increased as the fraction of working mother increased in the population.

5 Discussion

5.1 Gender asymmetries in the literature

Gender asymmetries are also present in two recent papers that attempt to estimate the *direct* causal effect of parental education.[15] In their influential paper, Behrman and Rosenzweig (2002) find that paternal and maternal education have different effects on the educational attainment of children. Using data on identical (American) twins, they find that maternal education has a *negligible* direct causal effect on children's educational attainment while paternal education has a significant positive direct effect. Unfortunately, they assume that parental education has the same effect on children, regardless of their gender.

Black et al (2003) also attempt to estimate the causal effects of parental education on the attainment of children using Norwegian data. They do allow for gender differences of parents and children. Their main result is that paternal education has a negligible direct effect on the educational outcomes of both sons and daughters. In contrast, maternal education has a positive, small and significant effect on the attainment of sons, but not of daughters.[16] That is, they find

[15] There are several indirect effects. Parental education increases family income, may indicate better hereditary ability, increases the other parent's education due to marital sorting, and so on.

[16] They obtain this result when including only one parent's education "at a time" in their regressions. When they include both parents' education simultaneously (as we do), they still find no significant effects of the father's education (on both sons and daughters). However, this time they find a positive significant effect of maternal education on daughters' attainment (but not on sons), that is, maternal specialization in our jargon.

evidence that (Norwegian) mothers "specialized" in sons in the time period they consider.[17]

5.2 Pre-War cohorts

We can use our data to extend our analysis back to cohorts born since 1910. We proceed as before and summarize our results in tables 5.1 and 5.2, which extend tables 3.1 and 3.2. Figure 2.4 plots the evolution of parental gender specialization for all cohorts born between 1910 and 1969.

Over the longer horizon, we again find a relatively constant (small) degree of paternal specialization. Regarding maternal education, we note the existence of two episodes of maternal specialization: for cohorts born after 1955 and for cohorts born in 1930-34.[18]

Notice that the children born in cohort 1930-34 were roughly age 10 during World War II. Acemoglu, Autor and Lyle (2002) report that as a result of World War II American women entered the labor market in large numbers but this effect was just a *temporary* phenomenon. Five years after the War, the fraction of women in the labor market was back at its pre-war levels. The temporary increase in maternal specialization in figure 2.4 is consistent with our finding that maternal employment increases maternal specialization (on daughters).[19]

6 Concluding Remarks

A recent trend in Macroeconomics takes households as the unit of analysis in the hope of enhancing our understanding of several important economic issues. Progress in this area requires enhancing our knowledge of human capital production in households. In particular, what are the effects of

[17]It would be interesting to know if their results change when considering maternal work status during childhood of the respondent.

[18]For the cohorts born in 1910-19, maternal specialization is also noticeable. We ignore this fact because of the small number of individual observations for this cohort.

[19]Perhaps the reason why no paternal specialization is present is that the fathers were absent, mobilized for the War.

increasing parental education on the educational attainment of children? Do these effects depend on whose parent is obtaining more education?

This paper has attempted to address the latter question by analyzing the experience of the cohorts born from 1910 to 1970. This period, especially since World War II, has witnessed profound changes in the time allocation of households with the spectacular increase in the labor force participation of married women (with children).

We have provided two main results. Our first result is the finding of *parental gender specialization*, that is, father's education matters more for the educational attainment of sons (paternal specialization) and, likewise, mother's education matters more for daughters (maternal specialization). We also find an intriguing evolution over time of specialization patterns. Paternal specialization has been roughly constant (and relatively small) for all cohorts born between 1935 and 1970. In contrast, maternal specialization only appeared for the cohorts born after 1955, and has risen sharply since then. Our second result is that *maternal employment* significantly intensifies parental gender specialization of both types.

We offer two possible interpretations for our results, both built on the expansion of maternal employment. The first interpretation is that working mothers are role models for daughters (and not for sons). The second is that as a result of maternal employment, parental time becomes scarcer and leads parents to specialize (in the time spent with each child) as dictated by comparative advantage. The role model interpretation fits better our first empirical finding, while the comparative advantage interpretation appears more consistent with the second. Discriminating between the two hypotheses requires data we do not have. However, it is also possible that both explanations are partly responsible for our empirical findings.

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A Sensitivity Analysis

This section addresses some concerns about the robustness of the results reported above. Let us deal with them one by one.

A.1 Data censoring

We may be concerned that the drop in the weight of maternal education on sons's attainment might be the result of systematic differences in the age at interview of the respondents.

More specifically, the average age at the time of interview falls with the year of birth (see tables 1.1 and 1.2), increasing the possibility of "data censoring". That is, some individuals might have been interviewed before they completed their desired years of education. Coupled with the increasing average educational attainment of both parents throughout the time period considered, this aspect of the data collection might lead to artificially low estimated coefficients on parental education for the latest cohorts.

Tables 6.1 and 6.2 provide descriptive statistics for the sample of individuals of age 30 or above at the time of the interview. In order to assess the severity of the censoring problem we carry out the analysis using the subsample of individuals who were at least 30 years old at the time of the interview. Tables 7.1 and 7.2 present the results. Recall that in this sample the estimates have larger standard errors due to the lower number of observations, quite substantial for the cohorts born from 1955 onward (see tables 2.1 and 2.2).

The earlier results are largely confirmed. Figure 2.1 confirms our previous finding about the father's role. The father's education plays a larger role in the attainment of sons than in the attainment of daughters. On top of that, we find an upward trend in the father's coefficient, although for the current sample the increase is substantially larger on sons than on daughters.

Let us now turn to the mother's role. As figure 2.2 confirms, the maternal role is roughly constant for daughters but dramatically decreasing for sons, creating a gender gap for the cohorts born after 1955.

A final argument that plays down the severity of the potential censoring problem is as follows. If data censoring were the driving reason behind our finding in the drop in the maternal role for sons, by the same argument, we should also find a similar drop in the paternal role too. However, the father's education in fact increases for the latest cohorts.

A.2 Stagnation in the average educational attainment

We may also be worried that the gender asymmetry that we found in the evolution of the maternal role for the cohorts born from the 1950s and onward is simply reflecting the trends in the average cohort attainment. More specifically, recall from tables 1.1 and 1.2 that the average (by cohort) years of education stagnated for the cohorts born in the 1950s. In addition, while the average only slowed down for women, it actually decreased for men. If we combine this fact with the on-trend growth in the educational attainment of the mothers of these cohorts, we might suspect that this is the origin of the gender asymmetric change in the maternal role. In this case, our findings should not be interpreted as changes in parental roles because they would not be the result of intra-household ties between parents and children, but rather the result of averages, that are totally unrelated to family ties.

However, this argument faces a serious objection. As can be seen in tables 1.1 and 1.2, the average years of paternal education have increased monotonically for all cohorts (just like the years of maternal education). As a result, the slowdown experienced by the cohorts born during the 1950s should have also given rise to a gender asymmetry in the evolution of the father's role. That is, the coefficient on the father's education should have dropped for sons while being non-decreasing for daughters. However, figure 1.1 shows that this was not the case.

A.3 Non-linear relationship

We may be concerned that our results depend on the linearity assumption between the years of education of parents and children. In order to address this issue, we repeat the analysis using a nonlinear model. More specifically, we run a series of (gender-specific and cohort-specific) probits, where the decision variable takes value 1 if an individual graduated from college, and 0 otherwise. We include the same regressors as before. Tables 8.1-8.2 and figures 3.1-3.4 summarize the results. Regarding the father's role, we can see how the estimated coefficients follow an upward trend, both for sons and daughters, confirming our earlier finding. Again the mother's role evolves asymmetrically for the two genders for the cohorts born after 1950. Although a downward trend in the coefficient is noticeable for sons, in this case the asymmetry seems to originate more from an increase in the mother's effect on daughters than out of a drop in the maternal effect on sons.

B Chronology of female labor force participation

This section aims at providing some background about when married women entered the labor market. We report two measures widely used in the literature: labor force participation rates and average hours worked (outside the home). As we shall see, both measures suggest the same timing of events. For our purposes, we wish to focus on younger wives (in the age bracket 25-34) since they are more likely to have young children.

Goldin (1990) has studied the evolution of female labor force participation in the United States.

She concludes that the labor force participation of married women started to increase from 1920 and accelerated in the 1940s and beyond. Her analysis also reveals that while the expansion from the 1940's to the 1960's was driven by married women older than 35, *from the 1960's to the present, it was driven by the work of younger married women.* Table 3.1 describes the evolution of the labor force participation rates for white married women in the age group 23-34, for a number of years.[20] Observe the impressive increase that took place during the 1960s and 1970s.

Turning now to another measure of labor force participation, we borrow table 3.2 from McGrattan and Rogerson (1998).[21] It contains the average weekly hours worked per *person* for married men and women in the 25-34 age bracket.[22]

It is worth noting that the data reported in the table are the result of two effects: the weekly hours per *worker* and the fraction of workers in the population. That is, the data above are consistent both with an increase in the number of employed married women (extensive margin) and with a constant number of employed married women that increased their hours of work (intensive margin). In conclusion, work outside the house for married women with small children accelerated in 1960. Olivetti (2001) also makes this point and argues that it is the result of an increase in the returns to labor market experience for women.

Observe also that married men's labor force participation shows a slight decline over the time period considered, but it is very small relative to the changes in the labor force participation of married women.

[20] This is a fragment of table 2.2 in Goldin (1990).

[21] The data has been constructed by the authors using a number of waves of the U.S. Census. See their appendix for more details and a website to access their dataset.

[22] Source: McGrattan and Rogerson (1998), table 5.

Figures

Figure 1.1: Marginal effect of paternal education (plus/minus one std.dev.)

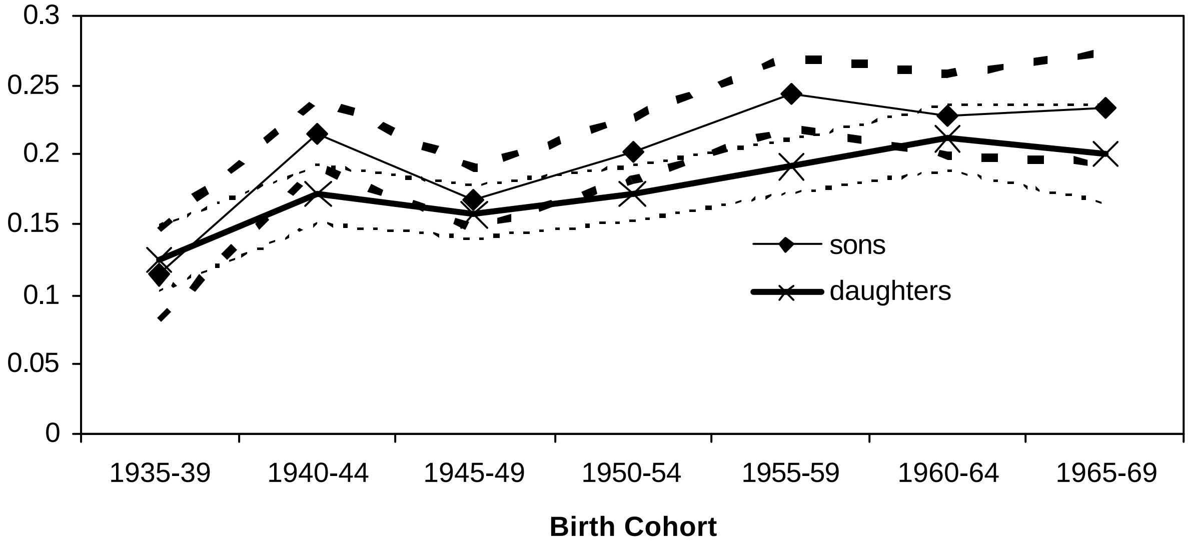

Figure 1.2: Marginal effect of maternal education (plus/minus one std.dev.)

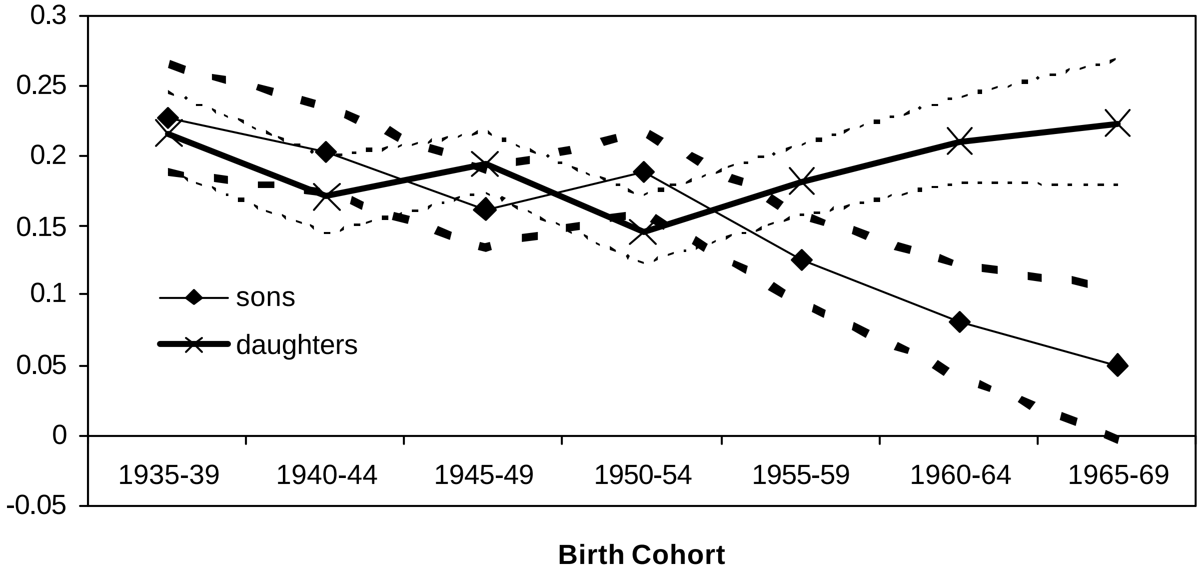

Figure 1.3: Intercept
(plus/minus one std.dev.)

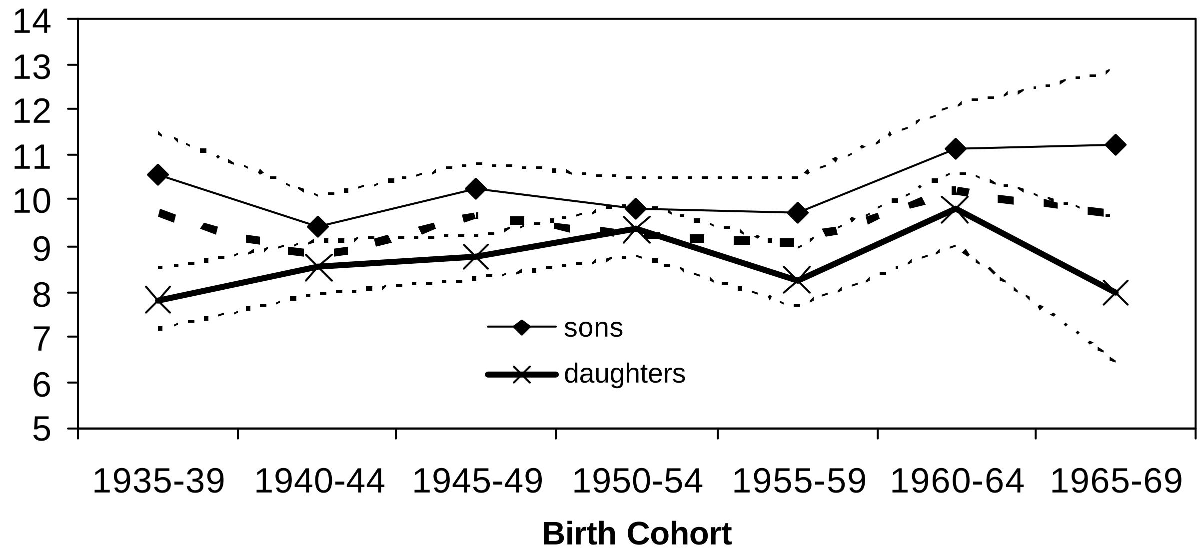

Figure 1.4: Gender Specialization
(plus/minus one std.dev.)

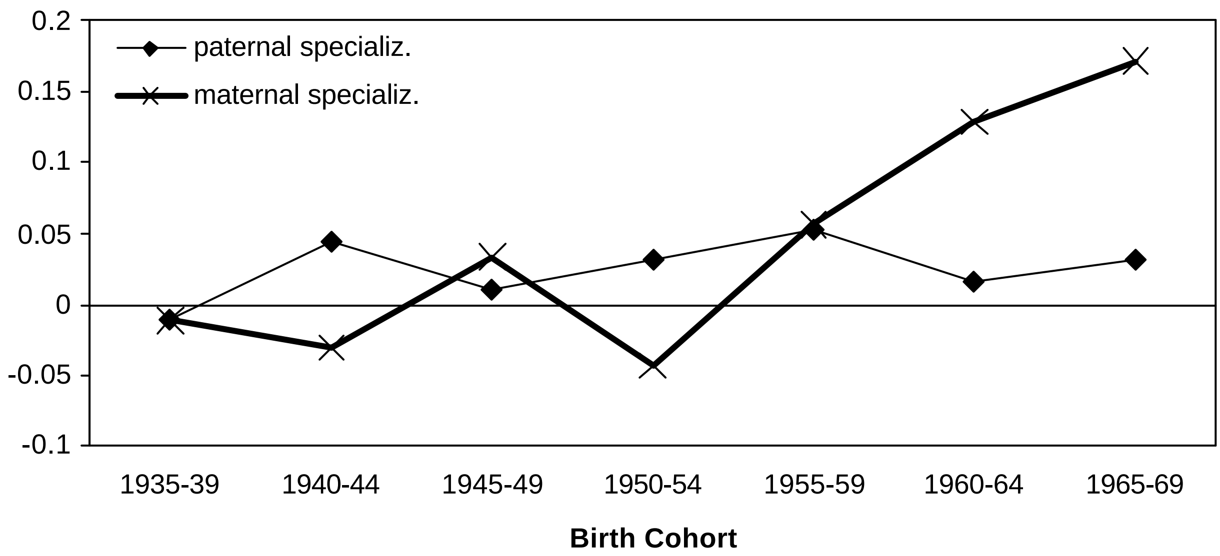

Figure 2.1: Marginal effect of paternal education (plus/minus one std.dev.)

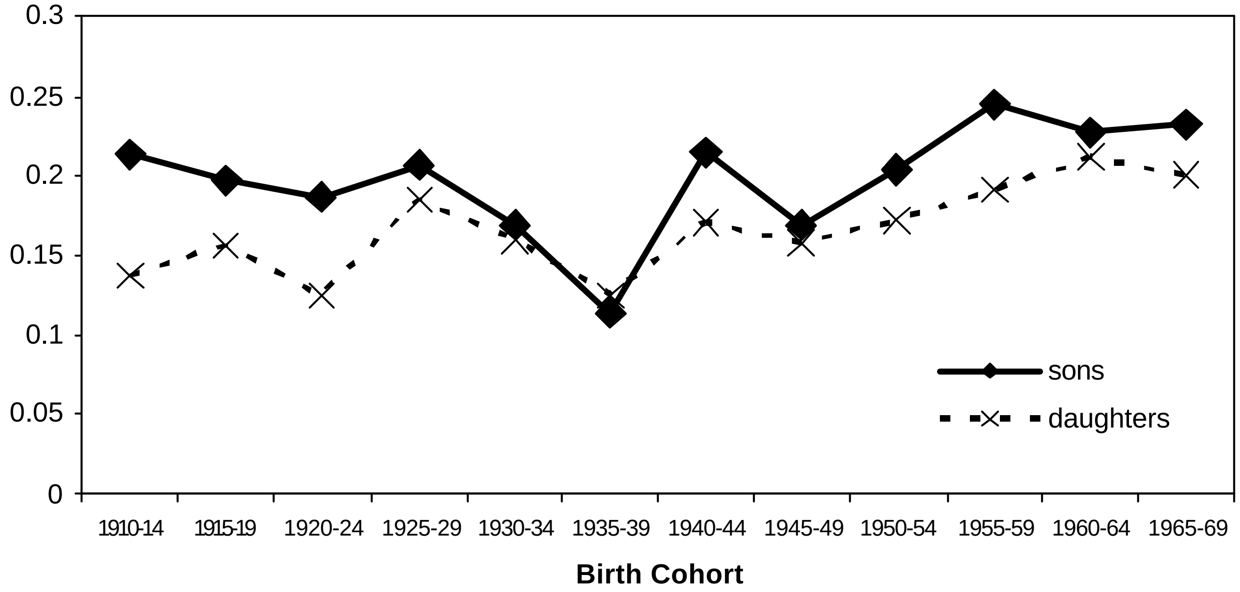

Figure 2.2: Marginal effect of maternal education (plus/minus one std.dev.)

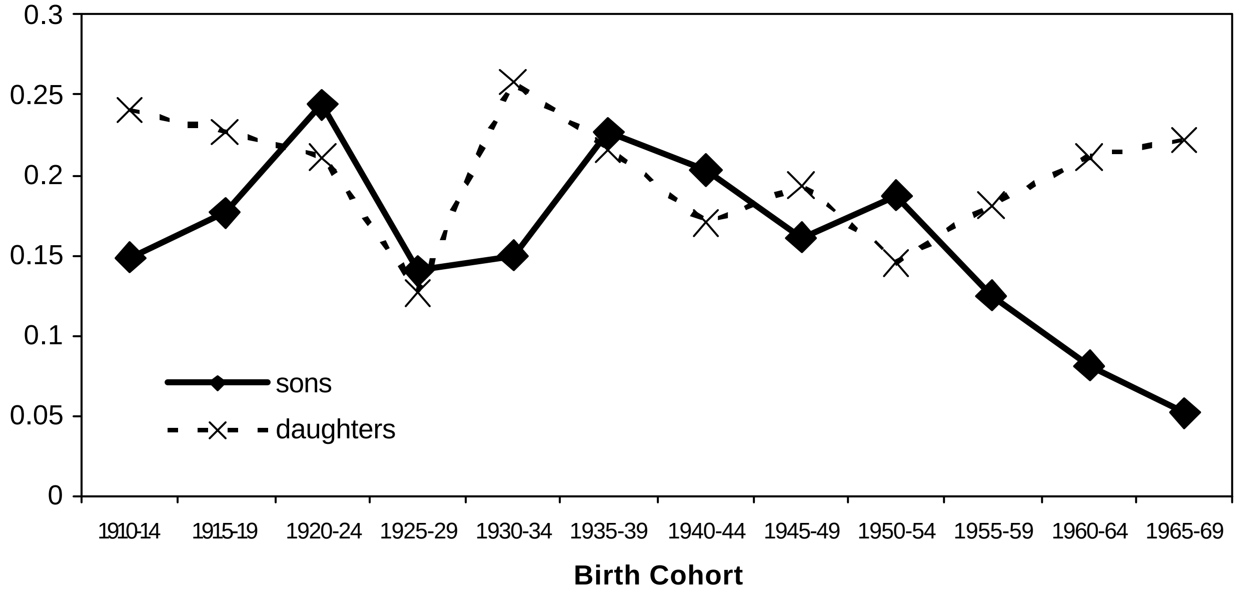

Figure 2.3: Intercept
(plus/minus one std.dev.)

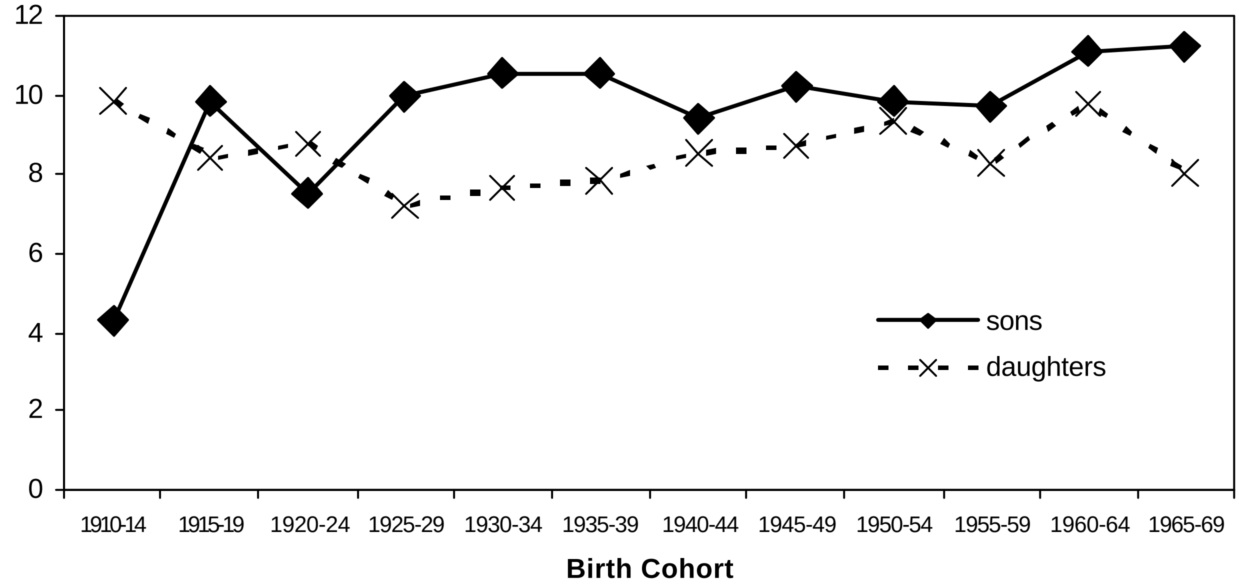

Figure 2.4: Gender Specialization
(plus/minus one std.dev.)

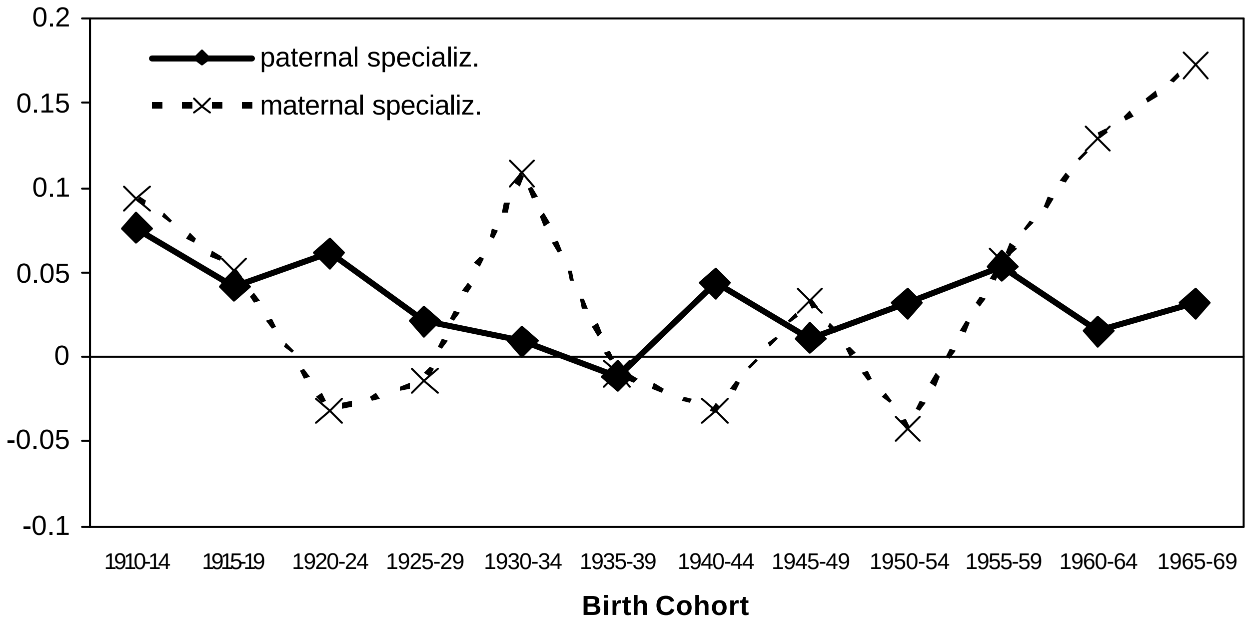

Figure 3.1: Father's coefficient (probit, sample 25+)

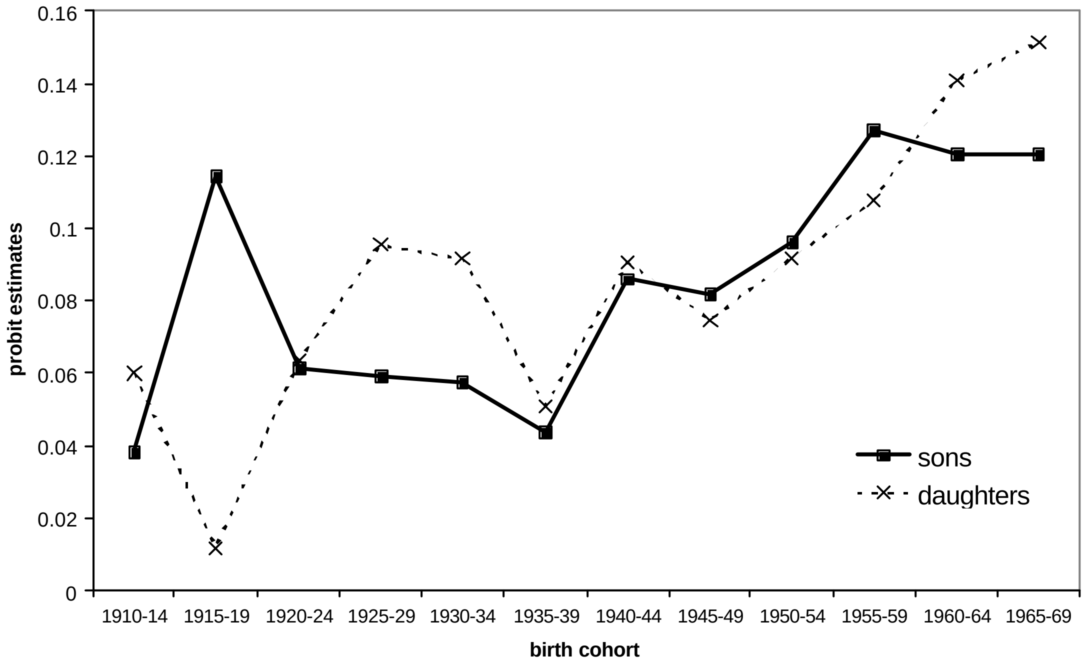

Figure 3.2: Mother's coefficient (probit,sample 25+)

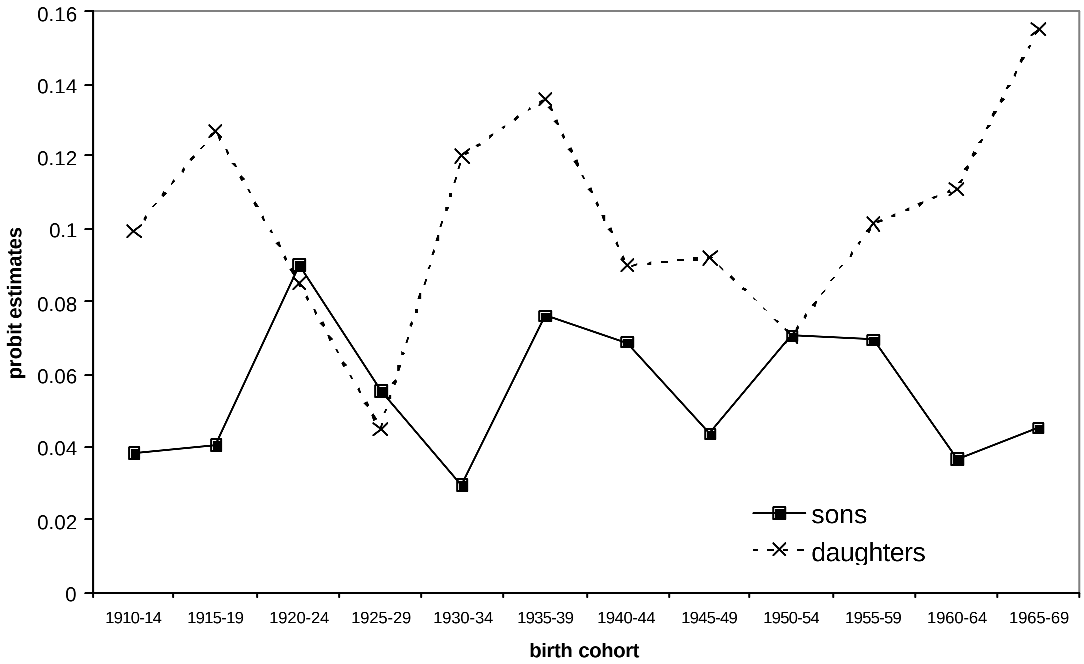

Figure 3.3: Intercept (probit, sample 25+)

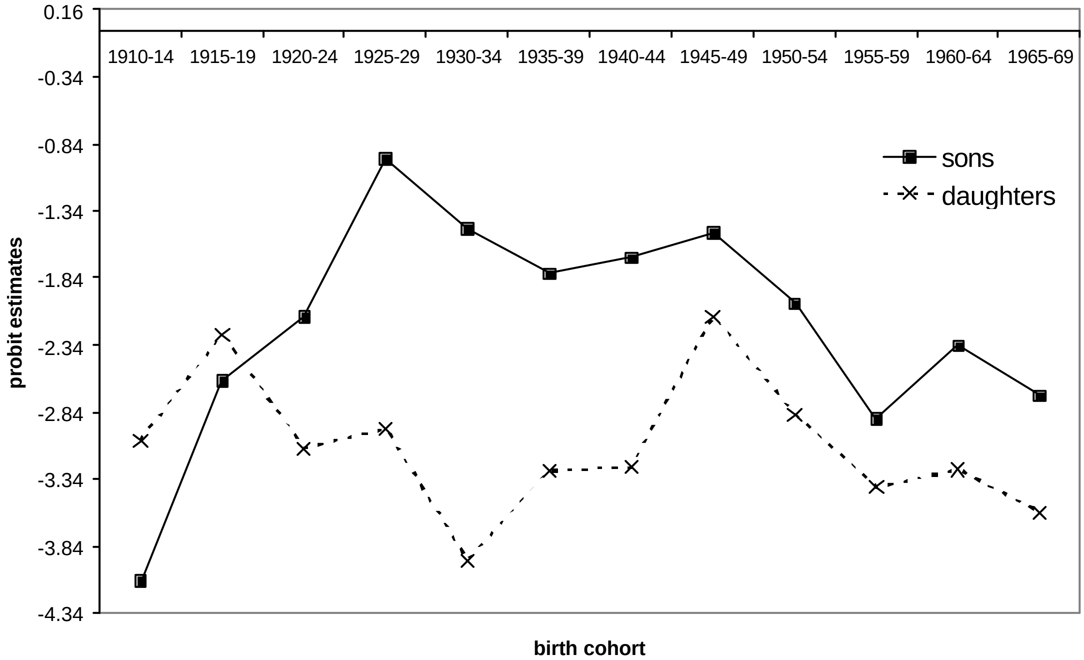

Figure 3.4: Gender Specialization (probit, sample 25+)

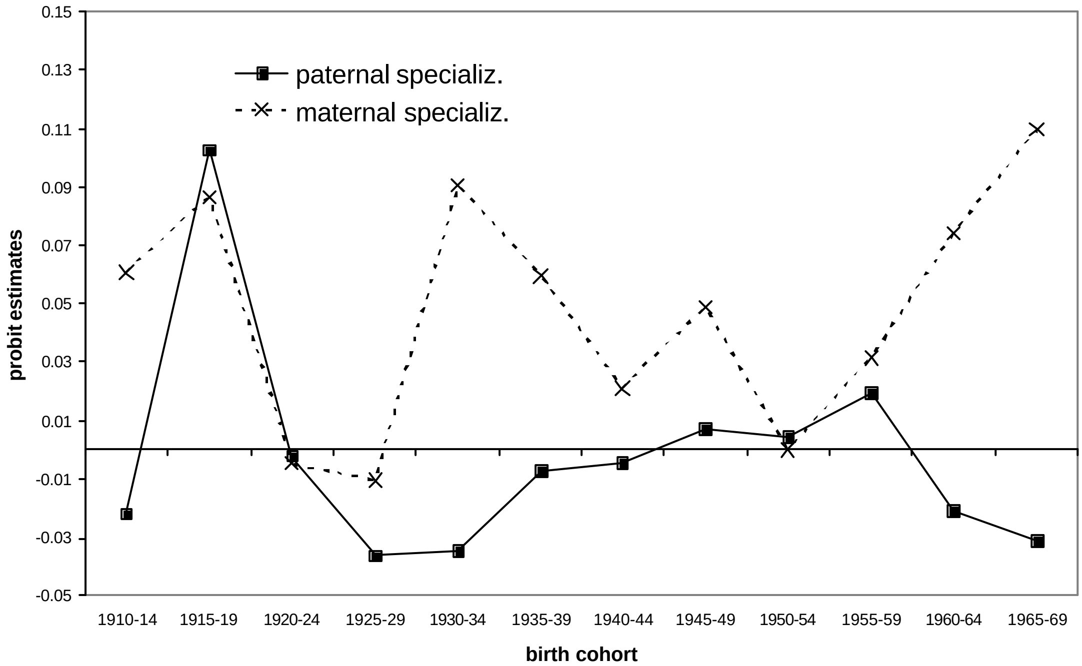

Table 1.1: Summary Characteristics by Cohort (Male, above 25)

Variable	Sample Mean *Std. Dev.*						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
No. observations	814	1047	1364	1169	1027	684	355
AGE	46.40	41.93	37.98	35.71	33.24	30.92	28.47
	8.20	*8.13*	*7.90*	*6.37*	*5.14*	*3.81*	*2.43*
EDUC	13.32	13.81	14.20	14.15	13.88	14.02	14.10
	3.20	*3.15*	*2.91*	*2.70*	*2.72*	*2.44*	*2.43*
PAEDUC	9.31	10.16	10.75	11.49	11.99	12.40	12.82
	4.14	*4.04*	*3.95*	*3.89*	*3.88*	*3.69*	*3.57*
MAEDUC	10.06	10.76	11.03	11.58	11.96	12.20	12.57
	3.46	*3.38*	*3.05*	*3.12*	*3.10*	*2.81*	*2.64*
SIBS	3.55	3.30	3.37	3.44	3.51	3.31	2.98
	3.07	*2.71*	*2.70*	*2.66*	*2.37*	*2.20*	*2.43*
BLACK	0.091	0.083	0.075	0.080	0.086	0.083	0.079
PROTESTANT	0.628	0.614	0.583	0.583	0.549	0.547	0.524
CATHOLIC	0.248	0.246	0.304	0.328	0.347	0.339	0.355
JEWISH	0.020	0.030	0.026	0.025	0.026	0.007	0.017
COUNTRY	0.128	0.102	0.101	0.116	0.121	0.145	0.132
FARM	0.208	0.185	0.140	0.111	0.125	0.098	0.073
SMALL TOWN	0.312	0.309	0.325	0.314	0.303	0.287	0.330
MID CITY	0.117	0.138	0.163	0.166	0.145	0.146	0.183
SUB CITY	0.080	0.121	0.130	0.150	0.184	0.190	0.152
LARGE CITY	0.156	0.143	0.141	0.143	0.123	0.135	0.130
NEW ENGLAND	0.048	0.043	0.045	0.047	0.051	0.063	0.065
MID. ATLANTIC	0.167	0.165	0.180	0.169	0.153	0.133	0.113
E.N. CENTRAL	0.177	0.218	0.224	0.225	0.222	0.211	0.194
W.N. CENTRAL	0.115	0.076	0.080	0.087	0.089	0.076	0.079
S. ATLANTIC	0.149	0.152	0.145	0.128	0.133	0.146	0.146
E.S. CENTRAL	0.076	0.078	0.055	0.062	0.054	0.047	0.070
W.S. CENTRAL	0.090	0.078	0.078	0.071	0.071	0.089	0.101
MOUNTAIN	0.036	0.040	0.045	0.045	0.053	0.050	0.042
PACIFIC	0.098	0.099	0.100	0.107	0.118	0.115	0.101
FOREIGN	0.001	0.001	0.001	0.008	0.007	0.010	0.025
Corr(EDUC,PAEDUC)	0.412	0.492	0.409	0.466	0.485	0.414	0.460
Corr(EDUC,MAEDUC)	0.429	0.452	0.378	0.412	0.396	0.292	0.304
Corr(PAEDUC, MAEDUC)	0.649	0.592	0.572	0.582	0.639	0.606	0.561

Table 1.2: Summary Characteristics by Cohort (Female, above 25)

Variable	Sample Means *Std. Dev.*						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
No. observations	957	1283	1588	1420	1311	812	411
AGE	46.60	42.38	37.83	35.70	32.93	30.72	28.45
	8.18	*8.24*	*7.95*	*6.23*	*5.11*	*3.75*	*2.35*
EDUC	12.72	13.24	13.62	13.73	13.87	13.88	14.06
	2.60	*2.70*	*2.57*	*2.51*	*2.47*	*2.45*	*2.44*
PAEDUC	9.31	10.07	10.64	10.94	11.89	12.22	12.80
	3.86	*4.09*	*3.86*	*3.89*	*3.97*	*3.85*	*3.77*
MAEDUC	9.89	10.45	10.98	11.19	11.84	12.17	12.68
	3.28	*3.29*	*3.26*	*3.12*	*3.09*	*2.93*	*2.98*
SIBS	3.84	3.59	3.59	3.71	3.73	3.55	3.04
	3.20	*2.95*	*2.87*	*2.74*	*2.76*	*2.53*	*2.33*
BLACK	0.090	0.104	0.111	0.127	0.111	0.115	0.102
PROTESTANT	0.652	0.635	0.609	0.630	0.576	0.570	0.545
CATHOLIC	0.254	0.256	0.302	0.295	0.357	0.337	0.319
JEWISH	0.018	0.021	0.022	0.023	0.025	0.014	0.019
COUNTRY	0.126	0.111	0.121	0.103	0.123	0.139	0.114
FARM	0.195	0.152	0.119	0.113	0.085	0.086	0.080
SMALL TOWN	0.317	0.332	0.312	0.320	0.300	0.303	0.326
MID CITY	0.131	0.155	0.156	0.171	0.188	0.172	0.190
SUB CITY	0.083	0.108	0.139	0.137	0.173	0.158	0.161
LARGE CITY	0.148	0.143	0.153	0.156	0.131	0.142	0.129
NEW ENGLAND	0.059	0.044	0.050	0.044	0.054	0.047	0.054
MID. ATLANTIC	0.171	0.162	0.178	0.154	0.163	0.166	0.095
E.N. CENTRAL	0.203	0.210	0.197	0.206	0.217	0.211	0.195
W.N. CENTRAL	0.096	0.092	0.079	0.085	0.081	0.075	0.100
S. ATLANTIC	0.149	0.140	0.141	0.151	0.133	0.137	0.134
E.S. CENTRAL	0.072	0.074	0.075	0.071	0.059	0.052	0.063
W.S. CENTRAL	0.084	0.094	0.088	0.083	0.076	0.078	0.102
MOUNTAIN	0.042	0.038	0.039	0.042	0.053	0.054	0.071
PACIFIC	0.066	0.100	0.105	0.113	0.120	0.123	0.124
FOREIGN	0.006	0.003	0.006	0.007	0.008	0.017	0.029
Corr(EDUC,PAEDUC)	0.396	0.441	0.450	0.422	0.460	0.489	0.481
Corr(EDUC,MAEDUC)	0.440	0.429	0.441	0.371	0.425	0.445	0.449
Corr(PAEDUC,MAEDUC)	0.588	0.620	0.594	0.611	0.601	0.551	0.573

Table 2.1: Roles of Parents' Education by Cohort (Male, above 25)

	Dependent variable is EDUC						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
PAEDUC	0.114 ***	0.214 ***	0.170 ***	0.204 ***	0.243 ***	0.228 ***	0.233 ***
	0.032	*0.025*	*0.022*	*0.023*	*0.025*	*0.029*	*0.040*
MAEDUC	0.225 ***	0.203 ***	0.160 ***	0.187 ***	0.127 ***	0.085 **	0.051
	0.039	*0.031*	*0.029*	*0.028*	*0.032*	*0.039*	*0.054*
AGE	0.025 **	0.027 ***	0.027 ***	0.026 **	0.050 ***	0.011	-0.004
	0.012	*0.010*	*0.009*	*0.011*	*0.014*	*0.022*	*0.047*
SIBS	-0.163 ***	-0.121 ***	-0.180 ***	-0.090 ***	-0.137 ***	-0.065	-0.138 ***
	0.035	*0.033*	*0.028*	*0.028*	*0.033*	*0.041*	*0.050*
BLACK	-0.455	-0.368	0.148	-0.183	-0.022	-0.249	-0.185
	0.359	*0.311*	*0.279*	*0.272*	*0.277*	*0.318*	*0.436*
PROTESTANT	-0.592 *	-0.221	-0.411	-0.310	-0.212	-0.257	0.107
	0.348	*0.283*	*0.261*	*0.308*	*0.293*	*0.301*	*0.412*
CATHOLIC	-0.786 **	-0.165	-0.138	-0.125	0.129	-0.017	0.062
	0.370	*0.302*	*0.271*	*0.314*	*0.299*	*0.303*	*0.405*
JEWISH	0.750	2.084 ***	1.192 **	0.717	0.484	0.397	2.953 ***
	0.768	*0.538*	*0.490*	*0.534*	*0.535*	*1.018*	*0.947*
FARM	0.211	-0.106	0.144	-0.142	-0.027	0.272	-0.050
	0.350	*0.317*	*0.285*	*0.288*	*0.296*	*0.347*	*0.526*
SMALL TOWN	0.438	0.586 **	0.638 **	0.233	0.333	0.784 ***	0.690 *
	0.323	*0.290*	*0.249*	*0.236*	*0.249*	*0.270*	*0.373*
MID CITY	1.265 ***	0.804 **	0.710 **	0.060	0.581 **	0.415	0.572
	0.402	*0.336*	*0.279*	*0.266*	*0.289*	*0.318*	*0.408*
SUB CITY	0.949 **	0.619 *	0.858 ***	0.530 *	0.463 *	0.850 ***	1.285 ***
	0.452	*0.348*	*0.297*	*0.274*	*0.274*	*0.300*	*0.430*
LARGE CITY	0.899 **	0.531	0.758 ***	0.504 *	0.783 **	1.047 ***	0.481
	0.387	*0.337*	*0.293*	*0.279*	*0.305*	*0.330*	*0.455*
NEW ENGLAND	0.418	-0.311	0.099	-1.116 **	-1.164 **	-1.473 ***	-0.915
	0.658	*0.536*	*0.460*	*0.444*	*0.460*	*0.494*	*0.613*
MID. ATLANTIC	0.157	-1.247 ***	-0.466	-0.977 ***	-0.960 **	-1.330 ***	-0.463
	0.540	*0.423*	*0.365*	*0.353*	*0.377*	*0.420*	*0.522*
E.N. CENTRAL	-0.259	-1.103 ***	-0.470	-1.170 ***	-1.145 ***	-1.504 ***	-0.307
	0.535	*0.412*	*0.358*	*0.341*	*0.359*	*0.393*	*0.471*
W.N. CENTRAL	-0.260	-0.696	-0.370	-1.015 ***	-0.958 **	-0.935 **	0.942
	0.570	*0.481*	*0.411*	*0.387*	*0.411*	*0.466*	*0.576*
S. ATLANTIC	-0.635	-1.364 ***	-0.790 **	-0.939 **	-1.165 ***	-1.259 ***	-0.902 *
	0.558	*0.432*	*0.376*	*0.371*	*0.384*	*0.424*	*0.503*
E.S. CENTRAL	-0.139	-1.210 **	-0.778 *	-0.850 **	-0.935 **	-2.291 ***	-0.622
	0.605	*0.482*	*0.450*	*0.422*	*0.453*	*0.530*	*0.606*
W.S. CENTRAL	-0.451	-0.473	-0.340	-0.858 **	-0.720 *	-1.511 ***	-0.508
	0.580	*0.472*	*0.409*	*0.401*	*0.422*	*0.450*	*0.531*
MOUNTAIN	0.492	-1.276 **	0.281	-0.630	-1.226 ***	-0.728	-0.820
	0.710	*0.546*	*0.460*	*0.441*	*0.455*	*0.514*	*0.665*
PACIFIC	-0.137	-0.624	-0.285	-0.902 **	-1.328 ***	-1.695 ***	-0.997 *
	0.576	*0.451*	*0.391*	*0.371*	*0.384*	*0.433*	*0.531*
Constant	9.616 ***	9.410 ***	10.289 ***	9.934 ***	9.010 ***	10.895 ***	10.752 ***
	0.833	*0.688*	*0.593*	*0.631*	*0.703*	*0.913*	*1.577*
Observations	814	1047	1364	1169	1027	684	355
R-squared	0.28	0.35	0.27	0.28	0.3	0.24	0.32

Standard errors in *italic*
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 2.2: Roles of Parents' Education by Cohort (Female, above 25)

	Dependent variable is EDUC						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
PAEDUC	0.125 ***	0.171 ***	0.158 ***	0.172 ***	0.192 ***	0.211 ***	0.200 ***
	0.024	*0.021*	*0.018*	*0.020*	*0.019*	*0.023*	*0.035*
MAEDUC	0.215 ***	0.171 ***	0.195 ***	0.145 ***	0.182 ***	0.210 ***	0.222 ***
	0.028	*0.026*	*0.022*	*0.024*	*0.025*	*0.030*	*0.044*
AGE	0.038 ***	0.042 ***	0.050 ***	0.053 ***	0.053 ***	0.025	0.028
	0.009	*0.008*	*0.007*	*0.009*	*0.012*	*0.020*	*0.046*
SIBS	-0.152 ***	-0.138 ***	-0.103 ***	-0.139 ***	-0.079 ***	-0.085 ***	-0.019
	0.025	*0.025*	*0.021*	*0.023*	*0.023*	*0.030*	*0.050*
BLACK	0.254	0.389 *	0.496 ***	0.530 ***	0.469 **	0.103	0.158
	0.273	*0.235*	*0.189*	*0.196*	*0.209*	*0.249*	*0.367*
PROTESTANT	0.138	-0.201	-0.510 **	-0.386	-0.259	-0.189	-0.366
	0.290	*0.246*	*0.231*	*0.278*	*0.306*	*0.289*	*0.355*
CATHOLIC	0.172	-0.024	-0.060	-0.050	-0.035	0.105	0.378
	0.309	*0.263*	*0.236*	*0.284*	*0.313*	*0.296*	*0.370*
JEWISH	1.523 **	0.695	1.213 ***	0.650	1.342 ***	0.140	0.295
	0.637	*0.511*	*0.431*	*0.469*	*0.476*	*0.683*	*0.813*
FARM	-0.324	0.132	-0.176	0.678 ***	0.291	0.983 ***	0.585
	0.267	*0.258*	*0.224*	*0.254*	*0.264*	*0.315*	*0.483*
SMALL TOWN	0.020	-0.101	0.170	0.159	-0.252	0.532 **	-0.490
	0.242	*0.228*	*0.186*	*0.211*	*0.202*	*0.237*	*0.356*
MID CITY	0.095	0.027	0.175	0.402 *	-0.099	0.738 ***	-0.554
	0.292	*0.261*	*0.212*	*0.234*	*0.222*	*0.263*	*0.397*
SUB CITY	-0.034	0.131	0.457 **	0.620 **	-0.159	0.733 ***	0.330
	0.326	*0.285*	*0.223*	*0.246*	*0.227*	*0.275*	*0.410*
LARGE CITY	0.202	-0.016	0.180	0.301	-0.361	0.700 **	-0.483
	0.289	*0.273*	*0.218*	*0.241*	*0.243*	*0.282*	*0.427*
NEW ENGLAND	0.199	0.484	-0.983 ***	-0.911 **	-0.189	-1.031 **	-0.250
	0.425	*0.435*	*0.353*	*0.388*	*0.393*	*0.470*	*0.640*
MID. ATLANTIC	0.122	-0.079	-0.710 **	-0.459	-0.284	-1.331 ***	-0.171
	0.353	*0.345*	*0.286*	*0.306*	*0.332*	*0.367*	*0.552*
E.N. CENTRAL	-0.015	-0.215	-0.659 **	-0.577 *	-0.445	-0.961 ***	-0.354
	0.348	*0.338*	*0.285*	*0.297*	*0.322*	*0.356*	*0.503*
W.N. CENTRAL	0.319	-0.011	-0.426	-0.594 *	-0.215	-0.746 *	0.230
	0.390	*0.378*	*0.326*	*0.338*	*0.366*	*0.421*	*0.558*
S. ATLANTIC	0.181	0.032	-0.809 ***	-0.906 ***	-0.541	-0.714 *	-0.250
	0.371	*0.359*	*0.300*	*0.312*	*0.340*	*0.384*	*0.542*
E.S. CENTRAL	0.456	0.040	-0.506	-0.501	-0.150	-0.748	-0.109
	0.421	*0.404*	*0.332*	*0.355*	*0.387*	*0.459*	*0.626*
W.S. CENTRAL	0.435	-0.210	-0.558 *	-0.510	-0.298	-1.030 **	-0.046
	0.401	*0.376*	*0.316*	*0.335*	*0.364*	*0.412*	*0.570*
MOUNTAIN	0.549	-0.175	-0.327	-0.934 **	-0.064	-1.158 ***	-0.430
	0.474	*0.453*	*0.376*	*0.390*	*0.387*	*0.448*	*0.594*
PACIFIC	0.415	0.043	-0.672 **	-0.764 **	-0.327	-1.423 ***	0.005
	0.417	*0.372*	*0.305*	*0.318*	*0.340*	*0.376*	*0.529*
Constant	7.853 ***	8.561 ***	8.995 ***	9.306 ***	8.539 ***	8.726 ***	8.402 ***
	0.632	*0.569*	*0.476*	*0.578*	*0.642*	*0.787*	*1.620*
Observations	957	1283	1588	1420	1311	812	411
R-squared	0.29	0.27	0.31	0.26	0.28	0.32	0.32

Standard errors in *italic*
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3.1: Women's Labor Force Participation (Goldin, 1990)

Year	1920	1930	1940	1950	1960	1970	1980
LFP rate	7.7	11.5	16.7	21	26.7	36.2	56

Table 3.2: Women's Labor Force Participation (McGrattan and Rogerson, 1998)

Year	1950	1960	1970	1980	1990	Percentage Change 1950-90
Females	8.09	9.1	12.21	18.77	23.9	195.4
Females with Child under 6	4.6	5.75	8.33	13.47	19.48	323.5
Men	41.14	40.67	40.3	38.7	40.25	-2.2

Table 4.1: Effects of Maternal Emproyment

Variables	Dependent variable is EDUC *std.dev.*			
MAWKBORN	0.723		BLACK	0.033
	0.714			*0.187*
(FEMALE)*(MAWKBORN)	0.294		PROTESTANT	-0.555
	0.925			*0.214*
PAEDUC	0.211		CATHOLIC	-0.155
	0.037	***		*0.221*
(FEMALE)*(PAEDUC)	-0.057		JEWISH	0.367
	0.046			*0.406*
(PAEDUC)*(MAWKBORN)	0.041		FARM	0.465
	0.052			*0.217*
(PAEDUC)*(MAWKBORN)*(FEMALE)	-0.095		STOWN	0.358
	0.067			*0.169*
MAEDUC	0.163		MID CITY	0.242
	0.051	***		*0.189*
(FEMALE)*(MAEDUC)	0.065		SUB CITY	0.464
	0.066			*0.192*
(MAEDUC)*(MAWKBORN)	-0.106		LARGE CITY	0.182
	0.069			*0.204*
(MAEDUC)*(MAWKBORN)*(FEMALE)	0.052		NEW ENGLAND	-1.171
	0.089			*0.34*
AGE	0.03		MID. ATLANTIC	-1.078
	0.02			*0.294*
SIBLINGS	-0.115		E.N. CENTRAL	-1.162
	0.023	***		*0.285*
CONSTANT	10.452		W.N. CENTRAL	-0.974
	1.000	***		*0.313*
FEMALE	-0.323		S. ATLANTIC	-0.933
	0.693			*0.298*
COHORT 1955-59	-0.253		E.S. CENTRAL	-1.034
	0.207			0.348
COHORT 1960-64	-0.413		W.S. CENTRAL	-1.074
	0.274			*0.319*
COHORT 1965-69	-0.343		MOUNTAIN	-1.224
	0.37			*0.348*
(COHORT 1955-59)*(FEMALE)	0.157		PACIFIC	-1.109
	0.246			*0.296*
(COHORT 1960-64)*(FEMALE)	0.266			
	0.263			
			Observations	1942
(COHORT 1965-69)*(FEMALE)	0.022			
	0.392		R-squared	0.24

Standard errors in *italic*
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4.2: Parental Gender Specialization and Maternal Employment

Null Hypothesis	Restriction on parameters	F statistic	p-value test
MS(w = 0) = 0	d(m) = 0	-0.065	0.3219
MS(w = 1) = 0	d(m) + f(m) = 0	-0.117	0.0496
PS(w = 0) = 0	d(p) = 0	0.057	0.214
PS(w = 1) = 0	d(p) + f(p) = 0	0.152	0.0017

Table 5.1: Roles of Parents' Education by Earlier Cohort (Male, above 25)

	Dependent variable is EDUC				
Birth Cohort	1910-14	1915-19	1920-24	1925-29	1930-34
PAEDUC	0.213 ***	0.198 ***	0.186 ***	0.207 ***	0.169 ***
	0.052	*0.039*	*0.040*	*0.039*	*0.037*
MAEDUC	0.148 **	0.176 ***	0.243 ***	0.141 ***	0.150 ***
	0.059	*0.041*	*0.048*	*0.045*	*0.045*
AGE	0.045	0.019	0.033 *	-0.009	0.010
	0.029	*0.019*	*0.017*	*0.016*	*0.015*
SIBS	-0.195 ***	-0.142 ***	-0.167 ***	-0.183 ***	-0.133 ***
	0.057	*0.047*	*0.040*	*0.046*	*0.042*
BLACK	-1.689 **	-1.103 **	-1.677 ***	-1.422 ***	-0.767 *
	0.662	*0.476*	*0.481*	*0.457*	*0.443*
PROTESTANT	0.245	-0.635	0.040	0.542	0.725 *
	0.566	*0.439*	*0.436*	*0.424*	*0.401*
CATHOLIC	-0.449	0.222	-0.086	0.128	0.228
	0.652	*0.506*	*0.486*	*0.464*	*0.444*
JEWISH	1.057	1.668 *	1.722 *	2.713 ***	1.562
	1.057	*0.867*	*0.888*	*0.830*	*1.124*
FARM	-0.532	-0.008	-0.709	-0.432	-0.076
	0.643	*0.556*	*0.474*	*0.507*	*0.460*
SMALL TOWN	1.178 *	1.240 **	0.274	0.798	1.017 **
	0.641	*0.551*	*0.474*	*0.503*	*0.434*
MID CITY	1.549 **	0.251	0.235	1.234 **	1.624 ***
	0.779	*0.628*	*0.545*	*0.573*	*0.540*
SUB CITY	2.045	2.216 ***	0.839	0.970	1.551 **
	1.392	*0.786*	*0.893*	*0.696*	*0.608*
LARGE CITY	0.999	1.911 ***	0.508	1.432 **	1.451 ***
	0.744	*0.632*	*0.562*	*0.562*	*0.502*
NEW ENGLAND	2.522 **	0.638	0.650	0.315	-0.436
	1.163	*0.942*	*0.873*	*0.965*	*0.947*
MID. ATLANTIC	1.679 *	0.161	0.945	-0.161	0.890
	0.919	*0.851*	*0.776*	*0.884*	*0.719*
E.N. CENTRAL	1.515 *	0.667	1.659 **	-0.327	-0.325
	0.903	*0.839*	*0.766*	*0.874*	*0.704*
W.N. CENTRAL	2.128 **	0.345	1.346 *	0.331	-0.576
	0.956	*0.907*	*0.809*	*0.903*	*0.774*
S. ATLANTIC	0.710	0.504	0.510	-0.199	-0.358
	0.996	*0.874*	*0.796*	*0.906*	*0.743*
E.S. CENTRAL	1.581	-0.456	-0.017	-0.448	-0.504
	1.052	*0.933*	*0.849*	*0.996*	*0.820*
W.S. CENTRAL	1.768 *	-0.210	0.358	-0.155	0.166
	1.015	*0.916*	*0.837*	*0.941*	*0.767*
MOUNTAIN	2.635 **	-0.208	1.372	0.617	-0.142
	1.323	*0.991*	*0.992*	*1.075*	*0.913*
PACIFIC	1.512	0.222	0.538	0.433	0.191
	1.158	*1.009*	*0.901*	*0.956*	*0.765*
Constant	4.265 **	7.633 ***	6.661 ***	9.941 ***	8.928 ***
	2.167	*1.573*	*1.316*	*1.340*	*1.161*
Observations	350	535	632	677	664
R-squared	0.4	0.36	0.38	0.3	0.26

Standard errors in *italic*
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5.2: Roles of Parents' Education by Earlier Cohort (Female, above 25)

	Dependent variable is EDUC				
Birth Cohort	1910-14	1915-19	1920-24	1925-29	1930-34
PAEDUC	0.138 ***	0.156 ***	0.124 ***	0.186 ***	0.160 ***
	0.044	*0.030*	*0.026*	*0.029*	*0.026*
MAEDUC	0.241 ***	0.227 ***	0.212 ***	0.127 ***	0.258 ***
	0.043	*0.034*	*0.028*	*0.031*	*0.031*
AGE	0.000	-0.004	0.006	0.023 **	0.011
	0.020	*0.013*	*0.011*	*0.011*	*0.010*
SIBS	-0.143 ***	-0.192 ***	-0.147 ***	-0.154 ***	-0.116 ***
	0.041	*0.033*	*0.027*	*0.031*	*0.029*
BLACK	-0.162	0.078	-0.637 **	-0.458	0.706 **
	0.451	*0.374*	*0.303*	*0.324*	*0.286*
PROTESTANT	0.168	0.387	-0.268	-0.218	0.200
	0.414	*0.358*	*0.319*	*0.303*	*0.299*
CATHOLIC	-0.567	0.140	-0.287	0.047	0.270
	0.490	*0.388*	*0.342*	*0.340*	*0.324*
JEWISH	2.962 ***	2.264 ***	-0.391	1.015	1.713 ***
	0.976	*0.736*	*0.664*	*0.662*	*0.604*
FARM	0.036	-0.232	0.015	-0.029	0.091
	0.469	*0.384*	*0.334*	*0.326*	*0.306*
SMALL TOWN	1.342 ***	0.421	0.323	0.496	0.401
	0.472	*0.386*	*0.324*	*0.309*	*0.296*
MID CITY	1.070 *	0.620	0.333	0.546	0.744 **
	0.566	*0.442*	*0.374*	*0.353*	*0.352*
SUB CITY	1.729 **	0.779	0.753	0.905 **	0.715 *
	0.722	*0.558*	*0.458*	*0.430*	*0.400*
LARGE CITY	0.406	0.003	0.342	0.381	0.657 *
	0.561	*0.443*	*0.363*	*0.358*	*0.341*
NEW ENGLAND	0.043	0.069	1.498 ***	1.608 ***	1.470 ***
	0.890	*0.641*	*0.546*	*0.522*	*0.546*
MID. ATLANTIC	0.036	0.699	1.671 ***	1.308 ***	0.975 **
	0.791	*0.530*	*0.485*	*0.465*	*0.407*
E.N. CENTRAL	-0.052	0.708	1.439 ***	1.637 ***	1.055 ***
	0.766	*0.529*	*0.480*	*0.452*	*0.396*
W.N. CENTRAL	0.418	1.067 *	1.715 ***	1.781 ***	1.481 ***
	0.804	*0.545*	*0.513*	*0.500*	*0.439*
S. ATLANTIC	-0.352	0.276	0.925 *	1.384 ***	1.016 **
	0.824	*0.536*	*0.499*	*0.483*	*0.420*
E.S. CENTRAL	-0.398	-0.023	0.977 *	1.121 **	0.933 **
	0.828	*0.606*	*0.534*	*0.523*	*0.469*
W.S. CENTRAL	-0.288	1.111 *	0.927 *	1.449 ***	0.843 *
	0.867	*0.589*	*0.534*	*0.523*	*0.442*
MOUNTAIN	0.376	1.489 **	2.002 ***	1.978 ***	1.179 **
	0.921	*0.667*	*0.618*	*0.562*	*0.508*
PACIFIC	0.518	1.460 **	1.224 **	1.489 ***	1.176 **
	0.960	*0.657*	*0.561*	*0.525*	*0.478*
Constant	8.132 ***	8.430 ***	8.057 ***	7.229 ***	6.881 ***
	1.605	*1.070*	*0.851*	*0.824*	*0.762*
Observations	478	670	838	810	823
R-squared	0.38	0.38	0.34	0.31	0.37

Standard errors in *italic*
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6.1: Summary Characteristics by Cohort (Male, above 30)

Variable	Sample Means *Std. Dev.*						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
No. observations	814	1011	1080	937	721	432	116
AGE	46.40	42.40	40.83	37.93	35.86	33.40	31.34
	8.20	*7.87*	*6.29*	*5.03*	*3.75*	*2.25*	*1.13*
EDUC	13.32	13.80	14.27	14.26	14.10	14.07	14.10
	3.20	*3.14*	*2.98*	*2.77*	*2.74*	*2.54*	*2.70*
PAEDUC	9.31	10.15	10.70	11.53	12.04	12.44	12.79
	4.14	*4.03*	*3.92*	*3.90*	*3.95*	*3.59*	*3.68*
MAEDUC	10.06	10.75	10.98	11.56	12.03	12.26	12.60
	3.46	*3.40*	*3.04*	*3.20*	*3.17*	*2.65*	*2.58*
SIBS	3.55	3.31	3.38	3.42	3.49	3.23	3.49
	3.07	*2.73*	*2.69*	*2.63*	*2.42*	*2.19*	*2.54*
BLACK	0.091	0.085	0.071	0.079	0.083	0.079	0.052
PROTESTANT	0.628	0.631	0.609	0.580	0.527	0.530	0.466
CATHOLIC	0.248	0.251	0.311	0.323	0.356	0.350	0.379
JEWISH	0.020	0.031	0.025	0.026	0.028	0.007	0.009
COUNTRY	0.128	0.102	0.097	0.111	0.119	0.134	0.103
FARM	0.208	0.189	0.144	0.107	0.118	0.083	0.078
SMALL TOWN	0.312	0.314	0.339	0.299	0.297	0.287	0.276
MID CITY	0.117	0.136	0.158	0.173	0.151	0.153	0.207
SUB CITY	0.080	0.119	0.128	0.154	0.183	0.197	0.181
LARGE CITY	0.156	0.140	0.134	0.157	0.132	0.146	0.155
NEW ENGLAND	0.048	0.042	0.048	0.046	0.057	0.069	0.078
MID. ATLANTIC	0.167	0.162	0.175	0.160	0.169	0.144	0.095
E.N. CENTRAL	0.177	0.219	0.224	0.225	0.219	0.220	0.198
W.N. CENTRAL	0.115	0.077	0.076	0.090	0.079	0.060	0.086
S. ATLANTIC	0.149	0.152	0.142	0.127	0.126	0.139	0.129
E.S. CENTRAL	0.076	0.078	0.045	0.058	0.053	0.046	0.034
W.S. CENTRAL	0.090	0.081	0.085	0.073	0.067	0.067	0.112
MOUNTAIN	0.036	0.039	0.053	0.051	0.044	0.053	0.052
PACIFIC	0.098	0.099	0.100	0.108	0.115	0.130	0.112
FOREIGN	0.001	0.001	0.002	0.010	0.010	0.016	0.069

Table 6.2: Summary Characteristics by Cohort (Female, above 30)

Variable	Sample Means *Std. Dev.*						
Birth Cohort	1935-39	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69
No. observations	957	1239	1248	1146	899	479	132
AGE	46.60	42.86	40.72	37.79	35.65	33.35	31.25
	8.18	*7.97*	*6.40*	*5.00*	*3.71*	*2.31*	*1.11*
EDUC	12.72	13.24	13.73	13.85	14.05	13.98	14.02
	2.60	*2.70*	*2.58*	*2.57*	*2.53*	*2.36*	*2.56*
PAEDUC	9.31	10.07	10.61	10.93	11.89	12.26	12.29
	3.86	*4.08*	*3.89*	*3.93*	*4.02*	*3.74*	*3.89*
MAEDUC	9.89	10.46	11.03	11.23	11.77	12.39	12.42
	3.28	*3.30*	*3.25*	*3.14*	*3.08*	*2.72*	*3.46*
SIBS	3.84	3.60	3.62	3.70	3.72	3.50	3.28
	3.20	*2.98*	*2.89*	*2.74*	*2.78*	*2.41*	*2.67*
BLACK	0.090	0.106	0.119	0.130	0.107	0.111	0.098
PROTESTANT	0.652	0.654	0.640	0.628	0.580	0.568	0.530
CATHOLIC	0.254	0.257	0.296	0.294	0.343	0.344	0.341
JEWISH	0.018	0.021	0.018	0.024	0.029	0.017	0.000
COUNTRY	0.126	0.111	0.123	0.099	0.117	0.140	0.159
FARM	0.195	0.153	0.120	0.114	0.096	0.084	0.083
SMALL TOWN	0.317	0.329	0.308	0.328	0.287	0.307	0.311
MID CITY	0.131	0.155	0.158	0.171	0.196	0.173	0.250
SUB CITY	0.083	0.111	0.140	0.130	0.180	0.150	0.083
LARGE CITY	0.148	0.141	0.151	0.157	0.125	0.146	0.114
NEW ENGLAND	0.059	0.044	0.046	0.048	0.056	0.038	0.068
MID. ATLANTIC	0.171	0.162	0.171	0.161	0.164	0.159	0.106
E.N. CENTRAL	0.203	0.210	0.204	0.198	0.206	0.207	0.182
W.N. CENTRAL	0.096	0.091	0.086	0.086	0.083	0.069	0.091
S. ATLANTIC	0.149	0.144	0.139	0.140	0.131	0.157	0.129
E.S. CENTRAL	0.072	0.075	0.079	0.076	0.053	0.058	0.098
W.S. CENTRAL	0.084	0.093	0.085	0.077	0.079	0.090	0.083
MOUNTAIN	0.042	0.037	0.041	0.046	0.060	0.038	0.061
PACIFIC	0.066	0.098	0.099	0.111	0.120	0.117	0.114
FOREIGN	0.006	0.003	0.007	0.009	0.011	0.029	0.061

Table 7.1: Roles of Parents' Education by Cohort (Male, above 30)

	Dependent variable is EDUC													
Birth Cohort	1935-39		1940-44		1945-49		1950-54		1955-59		1960-64		1965-69	
PAEDUC	0.113	***	0.206	***	0.197	***	0.210	***	0.238	***	0.298	***	0.297	***
	0.032		*0.026*		*0.025*		*0.026*		*0.030*		*0.037*		*0.067*	
MAEDUC	0.225	***	0.206	***	0.158	***	0.197	***	0.128	***	0.101	**	0.087	
	0.039		*0.031*		*0.032*		*0.031*		*0.038*		*0.051*		*0.095*	
CONSTANT	9.616	***	9.254	***	10.670	***	10.593	***	10.023	***	8.980	***	15.639	***
	0.833		*0.711*		*0.769*		*0.814*		*1.018*		*1.819*		*5.892*	
TEST of PAEDUC = MAEDUC (P-value)	0.080	*	0.994		0.432		0.807		0.075	*	0.010	***	0.147	

Notes: * Significance at 10% level. ** Significance level at 5% level. *** Significance level at 1% level.
Standard deviation is in *italic*

Table 7.2: Roles of Parents' Education by Cohort (Female, above 30)

Birth Cohort	1935-39		1940-44		1945-49		1950-54		1955-59		1960-64		1965-69	
PAEDUC	0.125	***	0.173	***	0.165	***	0.173	***	0.173	***	0.233	***	0.165	**
	0.024		*0.021*		*0.021*		*0.023*		*0.024*		*0.030*		*0.074*	
MAEDUC	0.215	***	0.175	***	0.173	***	0.162	***	0.210	***	0.180	***	0.241	***
	0.028		*0.027*		*0.025*		*0.028*		*0.031*		*0.041*		*0.088*	
CONSTANT	7.853	***	8.158	***	8.907	***	8.758	***	10.141	***	7.556	***	7.807	
	0.632		*0.603*		*0.646*		*0.749*		*0.937*		*1.497*		*6.420*	
TEST of PAEDUC = MAEDUC (P-value)	0.049	**	0.975		0.833		0.796		0.439		0.388		0.600	

Notes: * Significance at 10% level. ** Significance level at 5% level. *** Significance level at 1% level.

Table 8.1. Roles of Parents' Education by Cohort (Male, above 25, Probit)

	Dependent variable is COGRAD													
	std.dev.													
Birth Cohort	1935-39		1940-44		1945-49		1950-54		1955-59		1960-64		1965-69	
PAEDUC	0.0437		0.0862		0.082		0.096		0.1272		0.1203		0.1204	
	0.0169	***	*0.0142*	***	*0.0122*	***	*0.014*	***	*0.0169*	***	*0.0205*	***	*0.0286*	***
MAEDUC	0.0763		0.0689		0.0435		0.0705		0.0697		0.0367		0.0455	
	0.0225	***	*0.0177*	***	*0.0163*	***	*0.0177*	***	*0.0211*	***	*0.027*		*0.0401*	
CONSTANT	-1.8131		-1.6871		-1.5032		-2.0372		-2.8866		-2.3469		-2.7147	
	0.4503	***	*0.3829*	***	*0.3352*	***	*0.3964*	***	*0.4723*	***	*0.6439*	***	*1.1338*	**

Table 8.2. Roles of Parents' Education by Cohort (Female, above 25, Probit)

	Dependent variable is COGRAD													
	std.dev.													
PAEDUC	0.0509		0.0905		0.0745		0.0918		0.1076		0.1408		0.1514	
	0.0167	***	*0.0141*	***	*0.0125*	***	*0.0136*	***	*0.0141*	***	*0.0189*	***	*0.0289*	***
MAEDUC	0.1358		0.0902		0.0922		0.0705		0.1013		0.111		0.1551	
	0.0228	***	*0.0191*	***	*0.0155*	***	*0.0171*	***	*0.0185*	***	*0.025*	***	*0.0361*	***
CONSTANT	-3.2791		-3.255		-2.1289		-2.8568		-3.4024		-3.2744		-3.5943	
	0.4832	***	*0.402*	***	*0.3251*	***	*0.4007*	***	*0.4716*	***	*0.6181*	***	*1.182*	***

Notes: * Significance at 10% level. ** Significance level at 5% level. *** Significance level at 1% level.

Variable Names and Definition

Variable Name	Variable Definition
AGE	Respondent's age when he or she was interviewed
EDUC	R's years of completed education
PAEDUC	R's father years of completed education
MAEDUC	R's mother years of completed education
MAWKBORN	MAWKBORN = 1 if R's mother worked as long as a year after R was born and before R started first grade
SIBS	Number of siblings
BLACK	BLACK = 1 if R's race is black
PROTESTANT	PROTESTANT = 1 if R was raised as protestant
CATHOLIC	CATHOLIC = 1 if R was raised as catholic
JEWISH	JEWISH = 1 if R was raised as jewish
COUNTRY	COUNTRY = 1 if R lived in open country but not on a farm at age 16
FARM	FARM = 1 if R lived in a farm at age 16
SMALL TOWN	SMALL TOWN = 1 if R lived in small city or town (under 50,000) at age 16
MID CITY	MID CITY = 1 if R lived in Medium-size city (50,000 - 250,000) at age 16
SUB CITY	SUB CITY = 1 if R lived in a suburb near a large city at age 16
LARGE CITY	LARGE CITY = 1 if R lived in a large city (above 250,000) at age 16
NEW ENGLAND	NEW ENGLAND = 1 if R lived in New England at age 16. Includes: ME, VT, NH, MA, CT, RI
MID. ATLANTIC	MID. ATLANTIC = 1 if R lived in the Mid Atlantic region at age 16. Includes: NY, NJ, PA
E.N. CENTRAL	E.N. CENTRAL = 1 if R lived in the East North Central region at age 16. Includes: WI, IL, IN, MI, OH
W.N. CENTRAL	W.N. CENTRAL = 1 if R lived in the West North Central region at age 16. Includes: MN, IA, MO, ND, SD, NE, KS
S. ATLANTIC	S. ATLANTIC = 1 if R lived in the South Atlantic region at age 16. Includes: DE, MD, WV, VA, NC, SC, GA, FL, DC
E.S. CENTRAL	E.S. CENTRAL = 1 if R lived in the East South Central region at age 16. Includes: KY, TN, AL, MS
W.S. CENTRAL	W.S. CENTRAL = 1 if R lived in the West South Central region at age 16. Includes: AR, OK, LA, TX
MOUNTAIN	MOUNTAIN = 1 if R lived in the region that includes MT, ID, WY, NV, UT, CO, AZ and NM at age 16.
PACIFIC	PACIFIC = 1 if R lived in the Pacific region at age 16. Includes: WA, OR, CA, AK, HI
FOREIGN	FOREIGN = 1 if R lived in a foreign country at age 16.