# ECONOMICS DEPARTMENT

# WORKING PAPER

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Department of Economics
Tufts University
Medford, MA 02155
(617) 627-3560
http://ase.tufts.edu/econ

# ALL IN THE EXTENDED FAMILY: GRANDPARENTS AND COLLEGE ATTENDANCE[*]


## Abstract

Previous work on social interactions has analyzed the effects of nuclear family, peer, school, and neighborhood characteristics. None has previously demonstrated that grandparents also alter grandchildren's schooling independently of parents. This paper shows that higher years of schooling of grandmothers and grandfathers increase respectively college attendance rates for granddaughters and grandsons. These effects do not simply result from correlation with unobserved parent's characteristics. The paper has methodological implications for measuring the size of background effects and for policies that change outcomes by altering social interactions. (EconLit: I200)




Linda Datcher Loury
Associate Professor of Economics
Department of Economics
Tufts University
617-627-3348
email: Linda.loury@tufts.edu

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## I. Introduction

Sociologists and economists have long recognized that parent's characteristics affect children's schooling. However, none have previously demonstrated that grandparents alter grandchildren's schooling independently of parents. Grandparents could influence schooling by serving as role models, by sanctioning or encouraging particular behaviors, and by introducing individuals to information not available elsewhere.

This paper shows that grandmothers affect their granddaughter's schooling and that grandfathers influence their grandson's schooling. Correlation between grandparent characteristics and unobserved parent variables does not account for these results. This means that the web of social interactions is even more complex than implied by nuclear family, peer, school, and neighborhood relationships.

## II. Literature Review

Becker (1986) shows that, even without a direct connection, higher grandparent's schooling is associated with higher grandchildren's educational attainment. According to his model, parents maximize utility which is a function of their own consumption and the utility of their children. Adult earnings are determined by human capital (e.g. schooling) and market luck, schooling depends on parent's investments and children's endowments ($E_t$), and children's endowments, in turn, depend only on parent's endowment ($E_{t-1}$) and random error ($v_t$)

$$(1) \qquad E_t = \alpha_t + h_1 E_{t-1} + v_t.$$

If capital markets are imperfect and parents invest optimally, children's schooling is given by:

(2) $H_t = \theta^*( E_t, H_{t-1} + \eta_{t-1})$ or its linear approximation

(3) $H_t = \beta_E E_t + \beta_H (H_{t-1} + \eta_{t-1})$

where $H_{t-1}$ is parent's education[1], $\eta_{t-1}$ consists of parent's market luck and other determinants of parent's income, and $H_{t-1} + \eta_{t-1}$ equals parent's income,.

Substituting for $E_t$ (using equation (1)) and then for $E_{t-1}$ using the version of equation (3) for the parent's generation, equation (3) can be rewritten as:

(4) $H_t = c_t + (\beta_H + h_1)H_{t-1} - \beta_H h_1 H_{t-2} + \beta_H \eta_{t-1} + \omega_t$.

The coefficient of parent's education is biased upwards by $h_1$, the relationship between endowments across generations of parents and children. On the other hand, holding parent's education constant, higher grandparent's schooling implies lower parent's endowments. Lower parent's endowments, in turn, reduce grandchildren's schooling. The negative effect of grandparent's schooling ($-\beta h_1$), therefore, results solely from its correlation with parent's endowment.

Even if this model is accurate, analysts (e.g. Behrman and Taubman, 1985) may not actually estimate negative coefficients for grandparent's schooling. Grandparent's schooling may be correlated with left-out determinants of parent's income ($\eta_{t-1}$). In this case, grandparent's schooling appears to raise grandchildren's education only because grandparent's schooling is associated with higher parent's financial or other resources.

This paper determines whether grandparent's schooling increases grandchildren's schooling independent of parent's endowments, income, or other characteristics. Such an effect would follow if children's endowments depend both on parent's endowment ($E_{t-1}$) and grandparent's endowments ($E_{t-2}$):

(5) $E_t = \alpha_t + h_1 E_{t-1} + h_2 E_{t-2} + v_t$.

Children's schooling can then be linearly approximated by:

$$(6) \qquad H_t = c_t + (\beta_H + h_1)H_{t-1} - \beta_H h_1 H_{t-2} + \beta_E h_2 E_{t-2} + \beta_H \eta_{t-1} + \omega^*_t$$

When $E_{t-2}$ is not included in the analysis, higher grandparent's education may result in higher grandchildren's schooling because it is correlated with grandparent's endowments $(E_{t-2})$[2].

It is difficult to identify the exact components of grandparent's endowments that would generate these effects ($\beta_E h_2$) since they could come from many sources[3]. For example, Manski (2004) shows that, if the schooling/earnings relationship changes little over time, knowledge from previous generations narrows the range of possibilities that later generations regard as plausible. Reducing uncertainty then increases the willingness to invest in schooling. Other work (Hitchcock, 1990) indicates that, while occupational earnings have changed over time, the relative rankings of jobs have, in fact, remained fairly constant.

The labor market knowledge transmitted between generations depends on gender. The index of occupational segregation continues to be high (for example, from 58.6 in 1980 to 53.1 in 1997 according to Wells, 1998) even though those composing the working population have changed. Jobs held by grandfathers would, therefore, inform grandsons about schooling and the labor market better than granddaughters and the jobs held by grandmothers would inform granddaughters better than grandsons.

Besides lowering uncertainty, higher grandparent's education increases grandchildren's schooling because individuals conform to the behavior or expectations of significant others (Akerlof, 1997; Cheng and Starks, 2002). While some previous research analyzes peer effects, other work emphasizes the role of adults, especially family

members. Case studies from Ianni (1989) found "considerable evidence of turning to adults for information, validation, and guidance for the future" (p. 86) from early to middle adolescence. According to Beam, Chen, and Greenberger (2002), 52 percent of a sample of 11th graders cited older relatives as very important non-parental adults in their lives (see also Scales and Gibbons, 1996; Cherlin and Furstenberg, 1986; and Denham and Smith, 1989.)

As in the case of peer effects (Hoxby, 2000), conformity to the behavior or expectations of non-parental significant others may differ by gender. In Blyth and Foster-Clark (1987), adolescent boys and girls mentioned extended family adult males as intimates equally as often (58 percent)[4]. However, girls were more likely to include extended family adult females (75 versus 57 percent). In Blythe, Hill, and Thiel (1982) seventy percent of male and 79 percent of female seventh through tenth graders listed at least one adult extended family member as an important person in their lives[5]. Girls included more female adult extended family members as important others (1.63) than boys (1.04). Boys reported about same number of male adult extended family members (1.08) as girls (1.06). Boys, however, cited significant adult male influences more often in Hirsch, Mickus, and Boerger (2002) and Coates (1987).

## III. Data and Empirical Results

This paper uses two data sources to estimate the effects of grandparent's schooling on college attendance for grandchildren. The first combines National Longitudinal Survey of Youth (NLSY) and the Children of the National Longitudinal Survey of Youth (CNLSY). The NLSY is a nationally representative panel of 12,686 individuals ages 14-22 in 1979 who were interviewed annually to gather information

about schooling, work, and other experiences. Beginning in 1986, the CNLSY collected information annually or biennially on children of the original female NLSY respondents.

The second data source is the National Longitudinal Study of Youth, 1997 (NLSY97). The survey includes a wide range of information about employment, education, background and other characteristics for a nationally representative sample of individuals aged 12 to 17 in 1997. The sample was re-interviewed annually between 1997 and 2003. In addition, their parents were interviewed in 1997 and provided information about their own characteristics.

This paper measures college attendance for CNLSY sample members ages 19-26 as of 2002. Older sample members (ages 27-32) were excluded to reduce overrepresentation from children born to younger women. The sample children were age 3 at most in 1979 when NLSY members were ages 14-24[6]. Information about grandparents and many background characteristics came from the mother's NLSY interviews. No information was available about grandparents on the father's side.

College attendance for the main NLSY97 sample members was measured as of the 2003 interview when individuals were ages 18 to 23. Data about the number of other household members and whether the individual lived in a two parent household at age 12 came from the original 1997 main sample interviews. Information about maternal and paternal grandparents' schooling and information about parent's income, schooling, and AFDC participation was taken from the 1997 parent's interview[7].

Separate probit analyses by gender were estimated using the form:

(7) $$Y = \beta_{GM}' X_{GM} + \beta_{GP}' X_{GP} + \beta_{O}' X_{O} + Z_{U} + \varepsilon$$

where Y is a dummy variable for whether the individual attended college, $X_{GM}$ equals schooling of grandmothers, $X_{GP}$ equals schooling of grandfathers, and $X_O$ equals other observed background variables. The $Z_U$ are unobserved background and other characteristics. According to the uncertainty and conformity literatures discussed above, $\beta_{GM}$ should be larger for granddaughters and $\beta_{GP}$ should be larger for grandsons.

Table 1 lists means and standard deviations of education attainment and selected family variables for both the CNLSY and NLSY97 samples. In each case, women attended college more often than men. However, some variable means differ between samples because the CNLSY disproportionately includes children born to younger mothers. NLSY and NLSY97 mothers averaged about 12 and 13 years of schooling respectively. CNLSY members were only about two-thirds as likely to attend college as NLSY97 respondents. Roughly 40-45 percent of CNLSY maternal grandmothers and grandfathers reported at least 12 years of schooling[8]. Counting both maternal and paternal grandparents, NLSY97 grandmothers and grandfathers were about 10 percentage points more likely to have at least 12 years of schooling.

Columns (1) and (2) of Table 2 list CNLSY probit college attendance results using a basic set of nuclear family and demographic characteristics. Each additional year of mother's schooling increased college attendance rates by roughly 2-3 percentage points for both sons and daughters. Each additional year that the family received AFDC had a somewhat smaller impact. While the effect of father's schooling on college attendance was higher for sons, the effect of living in two-parent families was larger for daughters.

Columns (3) and (4) of Table 2 show the results from adding grandparent's schooling, mother's Air Forces Qualifying Test scores (AFQT) and HOME Inventory scores to the analyses[9]. AFQT scores significantly raised college attendance only for females, but HOME scores had large and significant effects on college attendance for both sons and daughters.

The effects of grandparent's education were not uniform. Neither grandfather's nor grandmother's schooling had a significant effect on granddaughters in column (4), and, according to column (3), grandfathers had small, insignificant effects on granddaughters. In contrast, column (3) shows that college attendance rates were roughly 13 percentage points higher for grandsons with grandfathers who had at least 12 years of schooling compared to those with less well-educated grandfathers[10]. In analysis not shown here, the grandson coefficient for grandfather with 12 or more years of schooling is significantly larger than the granddaughter coefficient[11]. As indicated earlier, conformity effects and the information older generations convey about the schooling and careers may explain the grandfather's influences.

The gender-specific effects for grandsons are consistent with related research. According Benin and Johnson (1984), educational attainment is more highly correlated between older and younger brothers than between older and younger sisters. Loury (2006) showed that young men who found their jobs through older male relatives had higher earnings than those using other sources.

More detailed analysis indicates that omitted parent's or other variables do not account for the estimated effects of grandfather's education. For example, according to basic Becker model (1981), holding parent's schooling constant, grandparent's and

parent's endowments (and therefore grandchildren's endowments) are negatively correlated (see equation 4). However, more grandfather's schooling significantly raised college attendance for grandsons in Table 2. This finding does not by itself establish independent effects of grandparent education. The positive coefficients could result from omitted parent's characteristics.

A second confirmation of independent grandfather's influences follows if the omitted variables are correlated with parents' schooling and AFDC receipt. Adding mother's Armed Forces Qualifying Test (AFQT) and HOME Inventory scores changed the coefficients of parents' education and AFDC receipt from large positive and significant in column (1) to much smaller and insignificant in column (3)[12]. This implies that any initial upward bias in the effects of parents' schooling and AFDC receipt on grandsons due to omitted parent's characteristics declined substantially between columns (1) and (3).

The coefficients fell partly because parents' schooling and AFDC receipt proxy for many family characteristics that the HOME Inventory measures directly. The HOME Inventory gauges the amount and quality of the stimulation and support in the child's family environment (Bradley et al, 2000). These includes indicators of the physical environment, learning materials, modeling, instructional activities, regulatory activities, variety of experience, acceptance and responsivity in the child's home.

Unlike the coefficients of parents' schooling and AFDC receipt, the coefficients of grandfather's schooling are virtually identical to those in column 3 if HOME scores are left out of the analysis[13]. This means that the influence of unobserved parent's

characteristics that are correlated with parents' schooling and AFDC receipt does not explain the effects of grandfather's schooling in column (3).

A third confirmation of independent grandparent influences assumes that correlation between grandchildren's schooling and unobserved parent's characteristics includes gender-neutral and/or gender-specific components[14]. Gender-neutral correlation with omitted parent's characteristics would equally affect both granddaughters and grandsons. However, while grandfather's schooling increased grandson's college attendance rates, it had little effect on granddaughters in column (4). In addition, male-specific correlations can not explain the estimated effects for grandsons. Data is available only on the maternal grandfathers. Unobserved mother's characteristics may affect grandsons, but these mother's characteristics would not include male-specific unobservables common only to her father and other men in her family.

The last confirmation of independent grandparent influences follows from access to grandfathers. While grandfather influences through information or conformity effects rely on communication between parties, grandfather's schooling would be correlated with parent's unobservables whether or not grandsons and grandfathers had opportunities to interact. In analysis not shown here, the coefficient for whether grandfathers had at least 12 years of schooling but who were dead as of 1979 or whose daughters moved away from the state where grandfathers were likely to live[15] equaled -0.075 (0.191). The coefficient was significantly larger at 0.418 (0.131) for all other grandfathers - those who had more opportunities to influence their grandchildren.

Correlation between grandfather's schooling and omitted community or neighborhood characteristics cannot account for this difference. Given that extended

family members generally do not live in the same neighborhoods (see Logan and Spitze, 1994), the correspondence between grandfather's schooling and neighborhood unobservables is likely to be small. Furthermore, if county-wide poverty rates and percentages of individuals with four or more years of schooling or four or more years of college are added to the analysis, their coefficients are insignificant and the effect of grandfather's schooling does not change.

The 13 percentage-points effect of grandfather's schooling on whether CNLSY grandsons attended college is unexpectedly large. Overrepresentation of relatively young and, therefore, less well-educated mothers in the NLSY sample may account for this large influence. Grandfathers with more schooling could provide novel information about the labor market not available elsewhere or act as models of behavior markedly different from other family members.

Table 3 lists the college attendance probit results for the more representative NLSY97 sample. It shows that black men were less likely and black women were more likely to attend college than their white counterparts holding background constant[16]. The sizes of most of the background effects were, however, similar across genders. Each additional year of mother's or father's schooling raised the probability of attending college by 2 to 2-1/2 percentage points. Each additional sibling reduced that likelihood by a similar 2-1/2 to 3 percentage points. Those in families receiving AFDC payments in 1996 had lower rates, and those in households with higher 1996 incomes attended college more frequently.

In contrast, the coefficients of grandparent's schooling vary by gender. Although grandmother's schooling had no significant effect on grandsons, males with at least one

grandfather who had 12 or more years of schooling were 6 or 8 percentage points more like to attend college[17]. Similarly, while grandfather schooling coefficients were insignificant for granddaughters, those with at least one grandmother with more than 12 years of education were 10 percentage points more like to attend college than those whose grandmothers had less than a high school diploma.[18] The difference between the male and female coefficients (0.010 (0.077) and 0.266 (0.084) respectively) for any grandmothers with more than 12 years of schooling is significant at the 5 percent level.

As in the case of the CNLSY sample, gender-neutral correlation with unobserved parent's characteristics cannot account for the results. Gender-neutral correlation implies that grandfather's and grandmother's influences would apply equally to grandsons and granddaughters. However, the significant effects in Table 2 are gender-matched.

Furthermore, gender-specific correlation with unobserved parent's characteristics also cannot explain the results. Gender-specific correlation implies that maternal grandmothers would influence granddaughters more than paternal grandmothers. Maternal grandmother's schooling affects mother's unobservables which, in turn, influence granddaughters. Paternal grandmothers would not alter mother's unobservables in the same way. Using the same reasoning, paternal grandfathers would influence grandsons more than maternal grandfathers.

In results not shown here, the point estimate for paternal grandmother's college attendance on granddaughter's schooling (0.268 (0.149)) is, in fact, slightly larger than the point estimate for maternal grandmothers (0.196 (0.090))[19]. Similarly, the point

estimate for maternal grandfather's college attendance on grandson's schooling is greater (0.192 (0.072)) than that of paternal grandfather's college attendance (0.101 (0.133)).

The effects of grandparents differ between the NLSY97 and CNLSY samples. As indicated earlier, differences in the socioeconomic status of the nuclear families between samples may explain the larger grandfather effect for the CNLSY sample. Educated grandfathers may affect grandsons more in disadvantaged nuclear families. On the other hand, differences in grandmother's education may account for its larger effects for the NLSY97 sample. Role model and other conformity influence may be higher because NLSY97 maternal grandmothers who attended college graduated (8.3 out of 19.3 percent) more often than CNLSY grandmothers (3.6 out of 12.1 percent). In addition, these grandmothers may provide more information about the relationship between the labor market and schooling. Labor force participation rates for female college graduates have historically been substantially higher than for those with 13- 15 years of schooling (Smith and Welch, Table 6, 1984).

## IV. Summary

Although other research concludes that family history matters, this paper shows that intergenerational effects are more pervasive than previously demonstrated. The gender-matched effects of grandparent's education on whether grandchildren attended college indicate that differences in schooling two generations away directly affect educational choices. Historical consequences of inequality would, therefore, tend to linger on much longer.

Alone each component of the more detailed analysis would not be sufficient to rule out spurious correlation with parent's unobservables. However, jointly they imply

that such an interpretation is unlikely to explain the results. The effects are large, positive, and significant unlike the negative effect predicted by the basic Becker model. The NLSY effects of grandfathers on grandsons do not change substantially after controlling for family characteristics (i.e. HOME scores) that account for most of the effects of parents' schooling and AFDC receipt on children's college attendance. Gender-neutral correlation with parents' unobservables cannot explain the pattern of effects since grandfathers affect only grandsons and grandmothers affect only granddaughters. Gender-specific correlation with parents' unobservables cannot explain the pattern since paternal grandmothers have roughly the same effect as maternal grandmothers and paternal grandfathers have roughly the same effect as maternal grandfathers. While the effects from correlation with parent's unobservables would not require communication between generations, the NLSY grandfather effects are large and positive only if grandsons and grandfathers are able to interact. Finally, five out of the eight possible gender-matched grandparent coefficients (including all four for men) are positive and significant.

The paper has methodological implications. Some analysts have used grandparent's characteristics as instruments for parent's variables in intergenerational analyses of earnings and schooling (Lillard and Willis, 1994). Given the results here, this approach does not appear to be appropriate for U.S. samples. Furthermore, since grandparents affect grandchildren's schooling independent of parent's characteristics, previous estimates of the overall effects of background on schooling based on nuclear family, peer, and neighborhood characteristics would understate the total effect of social interactions. The gender-specific character of grandparent effects means that sibling

correlations in college attendance would be valid only if brothers and sisters are analyzed separately[20].

The paper points to the potential importance of non-spatial aspects of networks in making public policy. For example, participants in the *Moving To Opportunity* experiment were relocated to neighborhoods with lower poverty rates to improve socioeconomic outcomes for adults and children. Social interactions with extended family members, not based on immediate proximity, may drag down potential gains from improved neighborhoods. These continuing connections may partly account for insignificant increases in educational achievement for experiment participants (Sanbonmatsu, Kling, Duncan, Brooks-Gunn, 2006).

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## Footnotes

[1] The units of parent's human capital are chosen so that the return for one unit equals one.

[2] The actual coefficient for $H_{t-2}$ would equal $\delta\beta h_2 - \beta h_1$ where $\delta$ is the coefficient in the auxiliary regression of grandparent's endowments on grandparent's schooling. This coefficient is a downward biased estimate of $\beta h_2$ for $\delta<1$.

[3] Other studies (e.g. Black, Devereux, and Salvanes, 2003 and Lillard and Willis, 1994) discuss similar issues in interpreting the coefficients of parent's schooling in intergenerational analyses.

[4] Intimacy between adolescents and older extended family members was measured by "how much do you go to this person for advice", "how much does this person accept you no matter what you do", "how much does the person understand what you're really like", and "how much do you share your inner feelings with this person".

[5] Important people included "people you spend time with or do things with", "people you like a lot or who like you a lot or both", "people who make important decisions about things in your life", "people who you go to for advice", or "people you would like to be like".

[6] The mean age of the mothers at birth was 20 years. The results reported later are not sensitive to sample characteristics. The results are similar if the sample is restricted to younger sons and daughters. The total number of CNLSY sample members who are ages 18-26 was 2402. Of these, 175 were excluded from the analysis because their own

schooling data was missing and 34 were excluded because their mother's schooling data was missing.

[7] Out of the original 8984 main respondents, 1241 were dropped due to invalid or missing 2003 schooling information and 837 were excluded due to invalid or missing data for mother's schooling.

[8] For the CNLSY sample, the number of years of schooling was unknown for 7 percent of grandmothers and 15 percent of grandfathers. For the NLSY97 sample, the number of years of schooling was unknown for 13 percent of grandmothers and 18 percent of grandfathers. Those with missing data are included in the left-out category. Means and standard deviations of variables not included in Table 1 are available from the author.

[9] Adding HOME and mother's AFQT scores to the analysis increased by numerical values of the coefficient for the dummy variable whether black for both men and women.

[10] Black and white men are included together in these analyses since racial differences in the effects of grandparents were small. For example, the coefficient of the interaction between grandfather: schooling 12 or more years and whether black was -0.008 (0.215). In addition, results do not change when grandfathers with missing schooling data are excluded from the analysis. The coefficient for grandfather: exactly 12 years of schooling was 0.333 (0.133) and the coefficient for grandfather: more than 12 years of schooling was 0.384 (0.197).

[11] If grandsons and granddaughters are included in the same analysis (with dummy variables for race and gender groups), the coefficient for the interaction of whether grandfathers had 12 or more years of schooling and whether male was 0.344 (0.149).

[12] For men the change in the coefficients for parents' schooling and AFDC receipt were due to adding HOME scores. If AFQT scores are omitted, the coefficients for these variables are similar to those in column 3 of Table 2. Even though AFQT scores are not significant for men, they are included in this analysis. Other analysts (e.g. Currie and Thomas, 1999 and Heckman, 1995) have commonly interpreted them as controlling for unobserved family characteristics.

[13] The coefficients (standard errors) were 0.376 (0.127) and 0.411 (0.190) for grandfather: 12 years of schooling and grandfather: more than 12 years of schooling respectively.

[14] Lillard and Willis (1994) make similar assumptions about gender-neutral and gender-matched unobservables.

[15] These include daughters who raised their own children in a different state than the state where the daughters lived at age 14.

[16] This finding is consistent with greater fraction of black women attending college relative to black men and the decline in the higher college attendance rates for blacks compared to whites holding family background constant (Black and Sufi, 2002).

[17] The left-out group is individuals whose grandfathers had less than12 years of schooling and individuals whose grandfathers' schooling was unknown. The results are

similar when individuals with missing grandfather data are excluded from the sample. The coefficient for any grandfather: exactly 12 years of schooling is 0.136 (0.065). The coefficient for any grandfather with more than 12 years of schooling is 0.195 (0.078).

[18] The 10 percentage points are equivalent to over four additional years of mother's schooling. Results are similar if other measures of grandparents schooling (for example, the number of grandparents with exactly 12 years of schooling and the number with more than 12 years of schooling) are used. The results are also similar if individuals with missing grandmother data are excluded from the sample. The coefficient for any grandmother with more than 12 years of schooling is 0.268 (0.088).

[19] Many of the detailed CNLSY analyses cannot be duplicated here. HOME scores, mother's AFQT scores, and data about whether grandparents are living were not available for the NLSY97 sample.

[20] Solon, Page, and Duncan (2000) combine females and males to compute sibling correlations for total years of schooling.

Table 1. Means and Standard Deviations of Selected Variables

| | Men | Women | Men | Women |
|---|---|---|---|---|
| Whether Attended College | 0.2805 | 0.3436 | 0.4326 | 0.5448 |
| | (0.4495) | (0.4751) | (0.4955) | (0.4981) |
| Mother's Years of Schooling | 12.142 | 11.964 | 13.040 | 12.977 |
| | (1.947) | (1.888) | (2.828) | (2.773) |
| Maternal Grandfather with exactly 12 Years of Schooling | 0.3261 | 0.2856 | | |
| | (0.4690) | (0.4519) | | |
| Maternal Grandfather with >12 Years of Schooling | 0.1185 | 0.1226 | | |
| | (0.3234) | (0.3281) | | |
| Maternal Grandmother with exactly 12 Years of Schooling | 0.3821 | 0.3554 | | |
| | (0.4861) | (0.4788) | | |
| Maternal Grandmother with >12 Years of Schooling | 0.0764 | 0.1003 | | |
| | (0.2658) | (0.3006) | | |
| Any Grandfather with exactly 12 Years of Schooling | | | 0.2977 | 0.3014 |
| | | | (0.4573) | (0.4589) |
| Any Grandfather with >12 Years of Schooling | | | 0.2192 | 0.2090 |
| | | | (0.4138) | (0.4067) |
| Any Grandmother with exactly 12 Years of Schooling | | | 0.3770 | 0.3859 |
| | | | (0.4847) | (0.4869) |
| Any Grandmother with >12 Years of Schooling | | | 0.1997 | 0.1863 |
| | | | (0.3998) | (0.3894) |
| N | 1042 | 1115 | 3496 | 3410 |

Table 2. Estimated Effects of Selected Variables on College Attendance (CNLSY)

| | Men | Women | Men | Women |
|---|---|---|---|---|
| Black | -0.233 | 0.024 | -0.038 | 0.242 |
| | (0.116) | (0.102) | (0.129) | (0.114) |
| | [-0.059] | [0.012] | [-0.012] | [0.090] |
| Mother's Years of Schooling | 0.084 | 0.102 | 0.034 | 0.060 |
| | (0.031) | (0.029) | (0.035) | (0.031) |
| | [0.022] | [0.034] | [0.011] | [0.022] |
| Father's Years of Schooling | 0.056 | -0.004 | 0.029 | -0.031 |
| | (0.026) | (0.025) | (0.027) | (0.025) |
| | [0.013] | [-0.003] | [0.010] | [-0.0112 |
| Years in Lived with Two-Parent Family | 0.003 | 0.028 | -0.007 | 0.013 |
| | (0.014) | (0.013) | (0.014) | (0.014) |
| | [-0.000] | [0.010] | [-0.002] | [0.005] |
| Number of Siblings | -0.037 | -0.016 | -0.057 | -0.016 |
| | (0.044) | (0.040) | (0.045) | (0.041) |
| | [-0.015] | [-0.005] | [-0.018] | [-0.006] |
| Years Parents Received AFDC | -0.058 | -0.086 | -0.033 | -0.060 |
| | (0.028) | (0.026) | (0.029) | (0.027) |
| | [-0.018] | [-0.031] | [-0.011] | [-0.022] |
| Mother's Armed Forces Qualifying Test Score | | | 0.004 | 0.007 |
| | | | (0.003) | (0.003) |
| | | | [0.001] | [0.002] |
| HOME Score | | | 0.007 | 0.008 |
| | | | (0.002) | (0.002) |
| | | | [0.002] | [0.003] |

Table 2. Estimated Effects of Selected Variables on College Attendance (CNLSY) cont.

| | Men | Women | Men | Women |
|---|---|---|---|---|
| Maternal Grandfather with Exactly 12 Years of Schooling | | | 0.373<br>(0.128)<br>[0.126] | -0.113<br>(0.124)<br>[-0.040] |
| Maternal Grandfather with >12 Years of Schooling | | | 0.408<br>(0.194)<br>[0.144] | 0.062<br>(0.177)<br>[0.023] |
| Maternal Grandmother with Exactly 12 Years of Schooling | | | -0.133<br>(0.125)<br>[-0.043] | -0.027<br>(0.118)<br>[-0.010] |
| Maternal Grandmother with >12 Years of Schooling | | | -0.024<br>(0.225)<br>[-0.008] | 0.113<br>(0.195)<br>[0.041] |
| Constant | -2.160<br>(0.424) | -1.651<br>(0.401) | -1.796<br>(0.446) | -1.469<br>(0.407) |
| $X^2$ | 39.32 | 50.58 | 63.26 | 84.34 |
| N | 1042 | 1115 | 1042 | 1115 |

Robust standard errors are in parentheses. Estimates are weighted using 2002 NLSY child sampling weights. The terms in the brackets [ ] reports the effect of a one-unit change in the explanatory variable on the probability of college attendance. Other variables included in these analyses were dummy variables for don't know father's years of schooling, don't know mother's AFQT score, and don't know HOME score.

Table 3. Estimated Effects of Selected Variables on College Attendance (NLSY97)

| | Men | Women |
|---|---|---|
| Black | -0.131 | 0.110 |
| | (0.062) | (0.059) |
| | [-0.003] | [0.043] |
| Mother's Years of Schooling | 0.065 | 0.059 |
| | (0.011) | (0.012) |
| | [0.025] | [0.023] |
| Father's Years of Schooling | 0.062 | 0.046 |
| | (0.012) | (0.012) |
| | [0.024] | [0.018] |
| Parents Received AFDC in 1996 | -0.229 | -0.279 |
| | (0.109) | (0.115) |
| | [-0.087] | [-0.111] |
| Parents' 1996 Income | 0.00451 | 0.00425 |
| | (0.00088) | (0.00108) |
| | [0.00177] | [0.00168] |
| Lived with 2 Parents at Age 12 | 0.339 | 0.363 |
| | (0.057) | (0.058) |
| | [0.132] | [0.143] |
| Number of HH Members under 18 in 1997 | -0.066 | -0.076 |
| | (0.021) | (0.021) |
| | [-0.026] | [-0.030] |

Table 3. Estimated Effects of Selected Variables on College Attendance (NLSY97) cont.

| | Men | Women |
|---|---|---|
| Any Grandfathers with Exactly 12 Years of Schooling | 0.159<br>(0.063)<br>[0.063] | 0.054<br>(0.066)<br>[0.021] |
| Any Grandfathers with >12 Years of Schooling | 0.209<br>(0.075)<br>[0.083] | 0.120<br>(0.081)<br>[0.047] |
| Any Grandmothers with Exactly 12 Years of Schooling | -0.097<br>(0.061)<br>[-0.038] | 0.077<br>(0.062)<br>[0.030] |
| Any Grandmothers with >12 Years of Schooling | 0.010<br>(0.077)<br>[0.040] | 0.266<br>(0.084)<br>[0.103] |
| Constant | -2.209<br>(0.166) | -1.640<br>(0.170) |
| $\chi^2$ | 477.15 | 375.90 |
| N | 3496 | 3410 |

Robust standard errors are in parentheses. Other variables included in the analysis were dummy variables for don't know father's schooling and don't know parents' income. Estimates are weighted to reflect non-random sampling. The terms in the brackets [ ] report the effect of a one-unit change in the explanatory variable on the probability of college attendance.