

The Effects of Familial, Economic, and Social Variables on Children’s Educational Attainment

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I. Introduction

In a perfect world, children of all races, socio-economic backgrounds, and family types would not only have the opportunity to receive a higher education, but they would also take full advantage of these opportunities. The educational level of children in the ghettos of Chicago or St. Louis would be equal to their suburban counterparts. However, it is not a perfect world, and educational attainments of children and young adults from varying backgrounds differ greatly.

Do some children have an advantage coming into the world? In educational and economic studies, it has been found that family income, family type, and family size are determinants of the amount and quality of education children receive over their lifetime (Jones, 1999; Rosetti, 2000). It is evident that familial and parental factors can either benefit or harm the chances of children receiving an education and excelling in a scholastic environment. In our society, education has become the key to success and one factor attributing to the wage gap. The job opportunities once available to less educated individuals are becoming scarce as more employers are raising their employment standards. Jobs once filled by employees with high school degrees are now being taken over by college graduates. The job market is changing, which is why education has become increasingly important at such early ages.

Throughout this project, the impact of variables such as income, family size, single vs. dual headed households, parents’ educational attainments and other background factors affecting the educational attain-

ments of children in these families are examined. Additionally, the effect of children’s drug and alcohol use/abuse on their education is examined. In doing this project, I prove that key background factors give some children an educational advantage over other children.

Section II presents the human capital theory and explains the household production unit. It also evaluates the existing literature on socioeconomic factors relating to educational attainment. Section III explains the empirical model and data extracted from the National Longitudinal Survey of Youth (NLSY). Section IV discusses the results of the model, and Section V draws conclusions from the results and suggests policy implications.

II. Background and Review of the Literature

Economic theories relating to educational attainment focus on social and economic factors in the home and in the proximate environment. Gary Becker’s household production theory and the human capital theory directly link household resources

and investments to the educational attainments of children (Becker, 1993). The resources a family has is often dependent upon how many people the family consists of and how much disposable income the family has to spend on these resources. Although the idea of household production encompasses a broad spectrum of domestic economics, in this paper it

is used specifically to look at the available educational attainment of children based on their parental and familial socioeconomic factors.

The household production theory, which is the basis of my hypotheses, is an outgrowth of two

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theories; the human capital theory and the theory of allocation of time. Although these two theories view education as an investment rather than consumption, the household theory takes on a narrower viewpoint on investments dealing solely with the household. Household economics considers the family as not only a consuming unit but also as a producing unit. This theory states that a combination of time and resource inputs produce different types of commodities. Children and their educational attainments are considered two of the consumables produced at home (Becker, 1993). In order to produce what Becker calls "quality children", parents must spend their time at home and foster an environment that promotes and provides formal education (1993). Since families differ, time and money spent on investments will vary, as will attitudes that may be conducive to children's ability and willingness to learn.

Ermisch and Francesoni (1997 and 2000) completed two papers built on the household production model addressing the association between childhood parental employment, parental education levels, and subsequent education of children. Their findings show that time and money made available to a child affects the child's educational attainment. Children of mothers who work more during their early childhood stages have less educational attainments compared to children whose mothers spend more time at home with them (Ermisch, 2000). It is unclear whether this means that time is more important than money and other resources. However, by working, parents sacrifice time with their children during the developmental years. As more parents proceed to join the work force, hours spent with children decrease dramatically. In 1965, the average child spent about 30 hours per week interacting with a parent, but by the late 1980's this figure dropped to about 17 hours (Haveman, 1993).

In addition, parents' education is a powerful predictor of their children's educational attainments (Haveman, 1993). This is more so the case for mothers' education. Mothers with a higher level of education instill the importance of education in their children. Although fathers' education is important, mothers have a greater impact on the values children later find important (Ermisch, 1997). Therefore, a mother's feelings on education will be portrayed to her children. Mothers' attitudes about education can not be measured in an empirical model, but it is likely to be accounted for through the actions taken by parents.

Additionally, parents use their educational attainments to teach their children, thus increasing human capital directly.

Many studies have been done on the correlation of family structure and educational attainment. One, in particular, examines the effect of family structure on high school graduation rate. Boggess finds that living in a mother-headed household or a stepfather family has a negative effect on education levels due to a decreased level of resources (1998). However, once economic status is controlled for, the effect of these types of households on education is not significant. While income and available resources seem to outweigh the family structure variable in this study, living in a single-headed family is likely the cause for the lower economic status. Garasky also examines family structure finding that it is important to a child's educational attainment. The first few years of a child's life are the most important to have a stable family structure. However, as a child ages, the type of family structure becomes less critical to the child's educational attainment (1995). They receive more of their education outside of the home, in schools. Hence, household factors are less critical in determining the level of education attained by children. Also, children's age affects how they handle experiences. Consequently, as children mature, they are better equipped to handle divorces, separations, and the experiences of living in single headed households.

One additional parental investment factor that is not commonly looked at in research on children's educational attainment is religion. Haveman and Wolfe (1995) find that this factor is statistically significant and has a quantitatively large effect on children's educational attainments. In addition, Sander (1995) examines the effects of a Catholic upbringing on education. Although his results are not important to me due to the lack of comparisons to other affiliations, I am interested in seeing the effect of religious affiliations and their contributions to educational attainments.

III. Data and Empirical Model

I explore the effects of parental factors and other socioeconomic variables on children's educational attainments by employing a sample of 5166 people drawn from the 12,686 people surveyed in the National Longitudinal Survey of Youth (NLSY). The NLSY is based on in-person interviews with people, ages 14 to 22 in 1979, which would make the respondents 37 to 45 now. The panel, which

started with the 1979 survey, is interviewed annually. This database suits my study because it contains a deep set of socioeconomic background variables including questions based on the respondents' childhood. Ordinary least squares is used to test my hypotheses.

The variables used in the empirical model are defined in Table 1. Children's education (ChildEduc), the dependent variable, is actual years of educational attainment. This variable, taken from the 1998 survey, measures the respondents' attainments through 1997. Educational attainment is a function of the time inputs and available resources according to the household production model. All of the independent variables in the model measure socioeconomic and family background factors. These variables capture economic, demographic, and social conditions within the household, which existed during the respondents' childhood years.

Human capital literature closely links educational attainment of children to the backgrounds of their parents. Accordingly, parents' educational attainments are proven to be a resource input in their

children's human capital. It is hypothesized that mothers' educational attainments (MomEduc) are directly related to the educational attainments of their children for two reasons. First of all, children's actions often reflect their mothers' actions and attitudes. A mother with a higher level of education obviously values education; therefore, her attitude portrays the importance she places on education. In addition, children often mimic their parents' actions, which means that many children will strive for higher education when their parents' educational attainments are also high. Second, educated parents, have the resources to teach and help their children outside of the classroom. They act as a resource themselves. Boggess finds that fathers' educational attainments have little or no effect on children's educational attainments (1998). Consequently, it is not included in the model.

Family income (Income) is another important variable, which can determine what resources are made available to a household. It is hypothesized that this factor has a positive effect on children's educational attainments. As income increases, consumer products, which enhance human capital, are more

TABLE 1
Variables Included in the Empirical Model

Variable Name	Definition	How Measured	Predicted Sign
MomEduc	# Years of Education (1979)	Numerical Amount	+
Income	Net family income of household from all sources (1978)	Numerical Amount	+
FamSize	# of family members (1979)	Numerical Amount	-
FamType	Is family single or dual headed? (1979)	0=single 1=dual	+
DrugUse	R ever used heroine, crack, or cocaine? (1984)	0=No 1=Yes	-
Alcohol	R ever had a drink? (1982)	0=No 1=Yes	-
NoRel	Was R raised with no religious affiliation? (1979)	0=No 1=Yes	?
CathRel	Was R raised Catholic? (1979)	0=No 1=Yes	?
BapRel	Was R raised Baptist? (1979)	0=No 1=Yes	?
ProtRel	Was R raised Protestant? (1979)	Excluded in the Regression	?
OtherRel	R raised other religion besides the three listed above? (1979)	0=No 1=Yes	?
Dependent Variable ChildEdu	# Years of Education (1998)	Numerical Amount	

abundant in the household. The opportunities to purchase and use learning devices, such as computers and encyclopedias, are more common. The presence of these resources aid parents in promoting education and enhancing what is already being learned in school. The absence or presence of educational resources due to income may support or discourage children's interest in learning.

Another variable associated with income is family size (FamSize). This variable affects both time and resource inputs. As a family gets larger, parents have less time to spend individually with each child. Because less time is available, the amount of time spent reinforcing education and aiding in the learning process decreases. Resource inputs may also decrease as income is divided among more family members. The amount of income spent on educational resources may decrease or the time spent using the available resources may decrease as the child to educational resource ratio widens. In other words, the number of individuals using the resources increases as the number of resources stays the same.

Family structure is also an important determinant of time devoted to helping children achieve higher levels of education. Family type (FamType) is measured with a dummy variable, where zero denotes a single headed household and one denotes a dual headed household. Ermisch and Francesoni (1997) find that having spent time in a single parent family reduces the educational attainments of children. Overall, investment in children's human capital is reduced due to less time and resource inputs. Parents of single headed households are the sole breadwinners for the family. Therefore, more time is spent working and less time is invested in enhancing the children's learning process and other capabilities and successes. As the sole breadwinner, single parents often do not have as much disposable income to spend on household resources, which reinforce education. In dual headed households, income is often greater and two parents may be able to make more time available to spend with their children than a single parent.

The religion variable (Religion) included in NLSY asks respondents to categorize themselves into

nine religious denominations. Because this dummy variable would be quite large if I mimicked NLSY, I use the same categories Haveman and Wolfe (1995) use in their model-Protestant (ProtRel), Catholic (CathRel), Baptist (BapRel), and Other (OtherRel). Growing up in a household with no religious denomination (NoRel) is also included. I assume that the presence of any religion has a positive effect on educational attainment, but I am really interested to see if one specific religion has more of an effect than other denominations.

Finally, variables for both drug (DrugUse) and alcohol use (Alcohol) by respondents are included in the model. Little research is available on these factors, but they still may prove to be significant. The presence of alcohol and drugs is assumed to be detrimental to a child's upbringing. In the literature, Koch (2001) finds that alcohol consumption by children could lead to schooling problems. Factors, such as drug and alcohol use, affect the child's emotions, education, relationships with others, etc. In the case of drug use, marijuana use is not looked at since many people may just try it once. All heroin, crack, and cocaine use among respondents is included as the measure for drug use. Initially, parental drug and alcohol use was going to be examined to see what effect this would have on their children's educational attainments. However, NLSY does not ask the respondents about the use of these substances by their parents when they were growing up.

Table 2 includes the descriptive statistics, excluding the statistics on the dummy variables, explaining the collected data.

IV. Results

To determine the effects of familial and parental factors on children's educational attainments (ChildEduc), I run linear regression. The results are reported in Table 3.

The most important results in this regression are the significant positive effects that mothers' education (MomEduc), and net family income in the household (Income) have on educational attainment. This strong positive effect is consistent with the results found in the literature and

TABLE 2
Descriptive Statistics

Variable Name	N	Mean	Standard Deviation
Income	7561	17249.1	13160.66
FamSize	12668	3.85	2.6
MomEduc	11878	10.87	3.17
ChildEduc	8399	13.05	2.46

TABLE 3
Regression Results

Variable	Coefficient
Income	3.026E-05 (.000)**
FamSize	-8.910E-02 (.012)**
FamType	4.118E-02 (.080)
MomEduc	.218 (.011)**
DrugUse	-.384 (.084)**
Alcohol	.174 (.104)
CathRel	.361 (.157)*
BapRel	-1.512E-02 (.159)
ProtRel	Omitted
OtherRel	.457 (.159)*
NoRel	-.521 (.217)*
Constant	10.290 (.223)**
Adjusted R Squared	.209
Sample Size	5166

previous studies. Income is important in determining how much money can be spent on education and resources that will enhance education. This factor can also affect where a child attends school and the quality of education they receive. As stated earlier, mothers' education is significant in children's educational attainments because educated parents inevitably find education to be important and necessary. In addition, they have the ability to teach and help their children with material they themselves already know.

Family size (FamSize) is also found to be significant at the .01 level. The sign of this variable is negative as predicted earlier. These results show that the educational attainments of the respondents decrease as the number of children in the family increase. As monetary resources and parents' time are spread among more children, the amount of education suffers. Although the variable is significant, the coefficient is small showing only a slight decrease in educational attainments as the number of children in each family increased by 1 person.

In addition to these three socioeconomic variables, drug use (DrugUse) by the respondents is sig-

nificant at the .01 level. Although I expected the variable to have a negative impact on the respondents' education, I am surprised that this variable is significant. Originally, I wanted to examine marijuana use in my empirical model, but some people may not have used it on a regular basis. Cocaine, crack, and narcotics use is the measure of drug use among the respondents. By examining drug use that surpassed the use of gateway drugs, such as marijuana, the effect on education is better illustrated.

The purpose of including religion in this model is to examine the effects of different religious upbringings on children's educational attainments. In NLSY, the respondents chose between nine denominations and no denomination. For simplicity's sake, all ten choices are not included. Five independent variables are used to measure religion including Baptist (BapRel), Catholic (CathRel), Protestant (ProtRel), other denominations (OtherRel), and no denomination (NoRel). SPSS omitted the Protestant religion (ProtRel) variable from the five choices when I ran the regression. The four other religion coefficients are in reference to respondents who were raised in a Protestant home. Based on this, the variables including Catholic respondents (CathRel), respondents with other religious affiliations (OtherRel), and respondents raised with no affiliation (NoRel) are significant at the .05 level. It is unclear whether the signs for the coefficients would be positive or negative. The variables, (NoRel) and (BapRel), have negative signs. Because the other two affiliations included in the model have positive signs, it is indeterminate why the Baptist religion may be negative when compared to the Protestant religion. As stated earlier, these results may be inaccurate due to the number of respondents included in the survey and the number of religious affiliations measured.

The other independent variables are not significant. I ran a regression including only the significant variables. However, the other independent variables are included in the model due to an improvement in R-square. The R-square is lower using only the significant variables, yet it improves to .209 with the inclusion of all the variables originally stated in the model.

Although the NLSY has a deep range of questions, there were some problems obtaining the factors that may have affected the significance of some of the variables. First of all, the family type variable (FamType), which measures dual or single-headed

households, contains twenty or so categories in NLSY. Some of the respondents lived with both parents, while others lived with one adult who is not the respondent's parent. Overall, there are many combinations of households, which makes it difficult to test parental factors. Due to time restraints, the combinations of family types are split into single or dual-headed households, regardless of the presence of a parent. Despite the variable's insignificance, this may actually be a positive thing. Children may be more resilient to overcoming background characteristics than expected.

In NLSY, there are many questions on the frequency of alcohol use. However, there are no questions relating to alcohol use in the respondents' youth. The question taken from NLSY that is included in the model asks if the respondent has ever had a drink. This question is taken from the survey year 1982, which means the respondents would be 17 to 24. This variable is not as accurate in measuring the effect of alcohol use on education as a possible question asking about alcohol use in the respondents' youth.

The biggest concern with the model involves the dependent variable, the respondent's educational attainment measured in years (ChildEduc). Out of the 12,868 cases surveyed in NLSY, only 5,166 are included in this model due to missing values. Because the model includes only half of the cases in NLSY, the dependent variable may not be truly accurate in explaining the respondents. Secondly, the question arises whether the proportions of the survey's respondents are currently reflective of the U.S. population. The results of this model are useful to researchers and economists only if the survey is proportionate to the current population.

V. Conclusions

By applying an empirical model based on the household production theory to a sample of men and women, I explore how parental and other socioeconomic factors affect children's educational attainments. Consistent with other research, I found that a strong relationship exists between educational attainments, mothers' education, household income, and family size.

Although I hoped for better results in the empirical model, it was not surprising to see such a low R-squared. Only a few parental and familial factors are used in the empirical model. Mothers' hours at work may have been an important variable; however, it is not available in NLSY. This would have

explained how the amount of time spent with children affected their educational level. The quality and amount of time spent with children during childhood is fundamental to their physical and psychological growth. In addition to the parental and household factors not included in the model, there are other explanatory variables that are left out due to the focus of this paper. The type of school system, the amount of money spent on each child in the school, the location of the school, and the race and gender of the children are just a few variables that may better explain educational attainments.

Although the coefficients for the significant variables are small, these results are important in understanding the advantages that some children have at an early age. The policy implications of these findings are unclear. Can there be a policy designed to level the playing field? Can the government instate a policy where all children, especially girls, would have the opportunity to get the highest education in hopes that in the future they would positively effect the attainments of their children? Is it possible for income to be evenly distributed? Unfortunately, in the United States, these problems can not be solved without entirely changing our form of government. However, policies can be put in place to give opportunities to people and children that may fit into disadvantaged categories. Programs and policies that help with income and education for all must be continual, reinforcing the importance of these factors on educational attainments for future generations.

Future research should focus on the other parental and familial factors that may explain differences in educational attainments. It would be interesting to see if mother's job type affects children's educational attainments. Research focused on the specific amount of family time spent studying, watching TV, etc. may also prove to be an important indicator of educational attainments. In addition, other factors, including abuse, family deaths, and divorce may affect children's education, yet little research has been done on these topics. For economists and others to understand and control for differences in educational attainments, all possible factors contributing to educational attainments must be examined.

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