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Income Mobility Through Education in the United States

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Abstract

This study makes use of the National Longitudinal Survey of Youth (NLSY) in order to examine the relationship between experiencing poverty as a youth and income as an adult. Human capital theory, as well as previous empirical research suggests that as standard of living as a youth increases, future income as an adult should increase as well. This paper attempts to study this effect through both direct and indirect pathways. The indirect pathway that we are interested in is education. We measure this indirect pathway by multiplying the effect on income of having a certain degree by the effect of being in poverty on the likelihood one obtains that degree. This process is done for two cohorts of NLSY survey respondents in order to examine how this relationship has changed over time. Our results show that those who grew up in poverty are less likely to achieve a higher degree. This in turn affects these impoverished youths' ability to obtain higher wages, perpetuating a cycle of poverty.

I. Introduction

Income mobility is an area of economics that has a broad range of impacts on people in the United States, especially those in poverty. Recently, much media attention has been given to the issue of income inequality and its moral and policy implications (Lauter, 2015). This reflects the general population's dissatisfaction with the current state of the country as it pertains to income inequality. There has been a corresponding amount of attention paid to this subject in economic literature. The 2015 Nobel Prize in economics was awarded to Angus Deaton, for his work on welfare and poverty. The Nobel committee awarding Deaton the Nobel Prize indicated that promoting welfare and reducing poverty is of high importance. Uwe E. Reinhardt, a colleague of Deaton, stated, "American economists did not focus on income inequality because it was very inconvenient for them to do so," referring to the 1970's (Timiraos, 2015). Today that is

not the case given the amount of economic literature that has been published on the subject in recent years.

It is well known that many people worldwide think of America as the *land of opportunity*. Some statistics today seem to dispute that assertion. For example, following the economic crisis of 2008, Emmanuel Saez found that in the first three years of recovery 91% of the income gains went to the top 1% of earners (Lauter, 2015). Are people who are born into poverty born into situations that prohibit them from entering this top 1%, or even the middle class? If the answer to this question is yes, then it seems like the notion that America is the *land of opportunity* may not be as true for those who grew up in poverty. The goal of this study is twofold; to quantify the effect that growing up in poverty has on the income level that one obtains as an adult and also to see if this relationship has changed between present day and twenty years ago.

In addition to any direct effect that growing up in poverty has on income as an adult, growing up in poverty is expected to effect income indirectly. The indirect pathway that this paper examines is education. It is hypothesized that those who grew up in poverty are less likely to obtain a high school or postsecondary degree. It is also hypothesized that higher degrees should lead to higher incomes. In this way, being in poverty as a youth indirectly leads to lower incomes as an adult. Therefore we need to take into account the decreased likelihood of obtaining a higher degree for those who grew up in poverty as a youth and that effect on income as an adult. Measuring the total effect that growing up in poverty has on income as an adult will act as a measure of income mobility across generations. The higher the total effect being in poverty as a youth has on income as an adult, the lower the level of income mobility. The first

research question of this paper is the following: How does growing up in poverty both directly and indirectly affect income as an adult? I am also interested in examining how this relationship has changed over time; therefore this question will be answered for two different cohorts of survey respondents of the National Longitudinal Survey of Youth (NLSY). These two cohorts began surveying in 1979 and 1997 respectively. The results of the two cohorts will be compared to see how they differ. Human capital theory, as well as published empirical research in economics shows support for the expectation that there should be a relationship between standard of living as a youth, and income as an adult.

II. Theory and Literature Review

There has been a great deal of research done on the subject of income inequality and income mobility. Scholars have attempted to address ways in which one can describe and model income inequality at any particular point in time, as well as studying various methods for how transitions out of poverty may occur (Fawaz, 2014, Gottschalk, 1997, Becker, 1979, Peters, 1992). One of the focuses of this study is on how being in poverty as a youth impacts income as an adult; therefore this study is most interested in previous literature on the methods for transitioning out of poverty.

One of the highly cited and foundational theories in income inequality and income mobility comes from Becker and Tomes (1979). Becker and Tomes' theory is based on the main framework that this paper draws from, human capital theory. An investment in human capital is any activity that is able to raise a worker's productivity. Human capital theory says that the higher an individual's human capital (and therefore productivity), the higher their wages should be. Becker and Tomes established the idea that the current

generation of a family can increase their consumption only at the expense of the future generation (Becker et al. 1979). In that sense, families attempt to maximize a utility function that spans multiple generations. As a result of this cross-generational utility function, families with less income will have less opportunity to invest in their children's human capital, because they will need to use those resources for more immediate needs that are vital for survival such as food and clothes. At the same time, families with more disposable income would be able to use their money to invest in their children by means of hiring private tutors, prep classes or standardized test preparation books. Based on this framework, higher levels of family income should correspond to higher human capital for youths, and therefore higher income when these youths become adults. This system perpetuates the groups of families with high human capital (and by extension high income), and causes the groups of families with low human capital (and by extension low income) to remain in their respective socioeconomic classes. This leads to the expectation that belonging to a family whose cross-generational utility function allows them to make investments into their children's human capital will cause higher productivity in their children, and therefore higher wages as an adult. This theory is the basis for the first research hypothesis of this paper, which is: those who grew up in poverty will experience lower wages as an adult.

There are a number of previous academic research articles that also draw on human capital theory in order to study income mobility across generations. Elizabeth Peters (1992) conducted an empirical analysis that relates one's parent's income to their own income later in life. This is similar to the research question of this paper, which relates the standard of living as a youth to income later in life. Peters poses the question

at the beginning of her article that she attempts to answer: “Does there exist a culture of poverty that is passed on from parents to children?” (Peters, 1992, p. 456). This is essentially the question that I hope to address as well, and the work of Becker and Tomes (1979) would suggest this to be true, as impoverished families would have less to invest in their children in terms of human capital.

The result of Peters’ study is that there is a relationship between parent’s income, and the income of their children in the future, but a small relationship. She finds changes in parents income account for 9% of changes in the future income for males, and 11% for females (Peters, 1992). However, I believe that the transmission may be even greater than this if a proxy of standard of living, such as the poverty level, is used rather than dollar income. This is because parent’s human capital investment in each child from a family of seven may be different than the investment of human capital from a family of two, given the same income level. Using dollar income of one’s family, as a predictor of their future wages does not take this effect into account, however the poverty level does, as the value of the poverty level increases for each additional child that a family has. This paper uses poverty level to act as a proxy for standard of living, as opposed to a fixed dollar value.

A study by Corcoran et al. in 1991 has also drawn from the theoretical model of human capital in order to investigate the association between a man’s economic status and his community origins (Corcoran et al. 1991). It was found that being from a low-income family, being a black man, and being from a welfare dependent family all significantly affect the economic status of men. Even after controlling for factors such as race and years of education they found an elasticity of .37 of earnings as an adult with

respect to family income as a child (Corcoran et al. 1991). It is expected that a similar relationship will hold for income and standard of living as a youth, which is the relationship that this paper hopes to establish.

In addition to the human capital, a college education is something that greatly affects one's future earnings. Israel and Seeborg (1998) found that educational attainment is one of the most significant factors that impact one's ability to transition out of poverty. A college education is not free however, and this is another factor that favors the children of wealthy parents. The cost of obtaining human capital by way of a college education has increased significantly since the 1970's. In 1971, the cost of tuition and fees at a public four-year institution in the United States in 2014 dollars was \$2,505, and by 2014 the cost of tuition and fees had risen to \$9,139 (Tuition and Fees and Room and Board Over Time). For private institutions, tuition and fees had jumped from \$10,724 to \$31,231 in 2014 dollars in that same time frame. The high levels of debt that students from low income families have to take on acts as a disincentive to obtain a college degree. Families with high levels of wealth that can afford college on their own will not face this disincentive to the same degree. As the real cost of education is rising in the United States, this effect is expected to be greater in more recent years. Because of the rising cost of education in the United States, the second research hypothesis of this paper is that the 1979 cohort of NLSY respondents will show more upward income mobility than the 1997 cohort. This is a result of the 1997 cohort of impoverished youths facing a higher relative disincentive to attend college than the 1979 cohort, and therefore obtaining college degrees at a lower rate relative to their non-impoverished youth counterparts.

III. Data and Empirical Model

The database that this paper uses is the NLSY. The NLSY database has a number of potential explanatory variables that can be used to identify the effects of being in poverty as a youth. A paper by Israel and Seeborg (1998) has made use of the same database to explain intergenerational modes for transitions out of poverty. This paper will make use of two different cohorts of respondents, the 1979 cohort, and the 1997 cohort. The 1979 cohort includes about 12,000 youths ranging in age from 14 to 22 years old when surveying began. These youths were then interviewed on an annual basis to follow them over time. The NLSY is intended to document transitions from youth into adulthood by collecting information on educational experiences, employment experiences and a number of other topics. The NLSY has data on family income, income as an adult, educational attainment and the poverty level for any given family. This provides the main variables needed to test the research hypotheses. Additionally, they have information on race and gender, which are factors that have been found to affect income in a significant way in previous literature including Corcoran et al. (1991). The 1997 cohort of the NLSY has the same information that can be used to compare the results across time. The 1997 cohort is a sample of over 9,000 youths who were between the ages of 12 and 16 as of December 31st, 1996.

Determining the extent to which being in poverty as a youth impacts income as an adult is accomplished using multiple ordinary least squares (OLS) regressions. The first regression, which this paper will refer to as the earnings model, will predict the natural log of income as an adult, which uses the NLSY data of total income from wages and salary in the past year for 1994 or 2011, for the 1979 and 1997 cohorts respectively.

These dollar values are adjusted for inflation. The natural log of total income and wages is taken in order to provide simple and intuitive explanations of the coefficients of the independent variables. For example, using the natural log of income as the dependent variable, the coefficient to the variable “Hispanic” represents the percent change in income observed as a result of being Hispanic once a logarithmic transformation of the coefficient is calculated. In the earnings model, a dummy variable that indicates being in poverty as a youth is used, which will be referred to as “In Poverty.” If the individual were in poverty as a youth this variable would take on the value of 1. If the individual were not in poverty as a youth this variable would become zero. Being in poverty is defined as living in a household with a net income that is lower than that of the poverty level for that given year as defined by the federal government. The theoretical model presented in this paper suggests that the coefficient for the dummy variable “In Poverty” will be negative, as being in poverty as a youth should have a negative effect on wages as an adult based on the human capital argument presented in the previous section. If the coefficient for “In Poverty” is negative, the first hypothesis is supported. The coefficient of this dummy variable in the earnings model will be the *direct effect* of being in poverty as a youth on income as an adult. This direct effect does not yet take into account the indirect pathway of education.

Other independent variables that will be included in the earnings regression equation include dummy variables for being Hispanic, Black, or male, which have been found to affect income levels on their own. Education levels also are controlled for in the earnings model in order to properly identify the direct effect. Having a high school diploma, Bachelor’s degree, Master’s degree, and a PhD or professional degree, are

included as dummy variables. In order to interpret the results properly, it is important to note that the education dummy variables take on a value of one for each degree held, as opposed to the highest degree of any particular person. For example, a master's degree holder will have a "1" for high school diploma, bachelor's degree and master's degree. Therefore the coefficient for "master's degree" should be interpreted as the additional income one receives having a master's degree *in addition* to what they would have if they only had a bachelor's degree. As there are two cohorts of youths, there will be two earnings equations.

Earnings Model:

$$\begin{aligned} \ln(\text{Income}) = & \alpha_0 + \alpha_1(\text{In Poverty}) + \alpha_2(\text{HISPANIC}) + \alpha_3(\text{BLACK}) + \alpha_4(\text{MALE}) + \\ & \alpha_5(\text{HS-Diploma}) + \alpha_6(\text{Bachelor's Degree}) + \alpha_7(\text{Master's Degree}) + \\ & \alpha_8(\text{PhD/Professional degree}) \end{aligned}$$

In order to measure the total effect of being in poverty as a youth on income as an adult, we also need to take into account the indirect pathway of education in addition to the direct pathway that is being measured through the earnings model described in the previous paragraph. It is hypothesized that being in poverty as a youth will decrease the likelihood of obtaining a college degree. It is also hypothesized that a college degree will increase earnings. The reason for including the indirect pathway of education is that those who grow up in poverty are predicted to have a harder time obtaining a higher degree. This may be the true reason for lower incomes as an adult. In order to measure the decrease in income as an adult that is a result of this indirect effect, regression equations predicting whether or not a particular survey respondent has a certain degree are needed.

Education Equations:

$$HS\ Diploma = \beta_0 + \beta_1(In\ Poverty) + \beta_2(HISPANIC) + \beta_3(BLACK) + \beta_4(MALE)$$

$$Bachelor's\ degree = \gamma_0 + \gamma_1(In\ Poverty) + \gamma_2(HISPANIC) + \gamma_3(BLACK) + \gamma_4(MALE)$$

$$Master's\ degree = \delta_0 + \delta_1(In\ Poverty) + \delta_2(HISPANIC) + \delta_3(BLACK) + \delta_4(MALE)$$

$$PhD\ or\ Professional\ degree = \varepsilon_0 + \varepsilon_1(In\ Poverty) + \varepsilon_2(HISPANIC) + \varepsilon_3(BLACK) + \varepsilon_4(MALE)$$

β_1 in the education equations is expected to be negative, due to the higher relative costs of going to college for those in poverty. The indirect effect of being in poverty on income as an adult through the pathway of a bachelor's degree is β_1 from the bachelor's education equation multiplied by α_6 in the earnings model. This is effectively multiplying the decreased likelihood of obtaining a college degree by the increase in income that one obtains given they have a college degree. There will be an indirect effect for each of the degree's listed above, which will be added together with the direct effect to obtain the total effect of being in poverty as a youth on income as an adult. The total effect of being in poverty as a youth on income as an adult is then:

$$Total\ effect = \alpha_1 + \alpha_5*\beta_1 + \alpha_6*\gamma_1 + \alpha_7*\delta_1 + \alpha_8*\varepsilon_1$$

These coefficients, as well as the total effect, will be compared for the 1979 and 1997 cohorts. It is expected that β_1 in the education equations will be smaller in magnitude for the 1979 cohort because of the lower real cost of education.

IV. Results

In an effort to provide insight into what may be expected of the regression results, descriptive statistics were obtained for both cohorts. The statistic that is most relevant to this research is what level of income do the survey respondents obtain as an adult on average, given that they were in poverty, or not in poverty as a youth? The results of these descriptive statistics can be seen in Table 1.

Table 1: Real Wage and Salary Income for Adult Respondents by Poverty Status as Youth

1979 cohort	In Poverty as a Youth	Not in Poverty as a Youth
Total income in 1994	\$19,948	\$25,784

1997 cohort	In Poverty as a Youth	Not in Poverty as a Youth
Total income in 2011	\$25,099	\$35,764

It can be seen that in both cohorts the salary as an adult of those who were in poverty as a youth was lower than those who were not in poverty as a youth. In the 1979 cohort, the salary for people who were in poverty as a youth was \$5,836 (25,784-19,948) less than those who were not in poverty as a youth. In the 1997 cohort, the salary for people who were in poverty as a youth was \$10,665 (35,764 – 25,099) less than the salary for those who were not in poverty as a youth. These statistics support the first research hypothesis that standard of living as a youth impacts income as an adult. Additionally, they support the second research hypothesis that the relationship between

standard of living as a youth and income as an adult is stronger in the 1997 cohort than it is for the 1979 cohort.

The results that have been obtained for the earnings model are what one would expect based on the descriptive statistics. It should be noted, that for the 1979 cohort, the coefficient of “Master’s degree” includes all those with a Master’s degree or higher. This is due to the fact that they did not have data for PhD holders. This means that the coefficient α_7 represents something slightly different for the two cohorts. For the 1997 cohort, the Master’s degree coefficient is interpreted as the additional income one receives from having a Master’s degree over having a Bachelor’s degree. For the 1979 cohort, the Master’s degree coefficient is interpreted as the additional income one receives from having a Master’s degree or higher over a Bachelor’s degree. The PhD or professional degree category was still left in for the 1997 cohort in order to obtain the most accurate value of α_1 possible.

The purpose of the earnings model was to measure the *direct* effect of being in poverty as a youth on income as an adult when controlling for level of education. The direct effect, combined with the indirect effect of loss of education is the total effect. The result of the earnings regression equation for the 1979 and 1997 cohorts was that being in poverty results in a 29.56% and 31.25% decrease in income as adults respectively compared to their counterparts who did not grow up in poverty. This is the direct effect. The percentage changes are obtained by the expression; $(\text{Exp}[\alpha_1] - 1) * 100$. These results support the first research hypothesis of this paper, that those who grew up in poverty will experience lower wages as adults.

Table 2: Regression Results for the 1979 Cohort (Earnings Model)

Earnings Model	Coefficient 1979 (Standard Error)	Coefficient (1997) (Standard Error)
Constant	9.201*** (.038)	9.880*** (.031)
In_Poverty	-.259*** (.034)	-.272*** (.038)
Male	.510*** (.026)	.303*** (.026)
Black	-.153*** (.032)	-.258*** (.033)
Hispanic	-.006 (.035)	-.018 (.034)
High School Diploma	.309*** (.035)	.090*** (.031)
Bachelor's Degree	.560*** (.036)	.372*** (.035)
Master's Degree	.325*** (.99)	.100* (.056)
PhD. or Professional Degree		-.038 (.196)
Adjusted R-squared Value:	.156	.093

*** = Significant at the .01 level, ** = Significant at the .05 level, * = Significant at the .1 level

Each of these coefficients in Table 2 is of the expected sign, with the exception of PhD or professional degree in table 2 for the 1997 cohort. It appears that those in the 1997 cohort with a PhD or professional degree make 3.73% less than those with only a Master's degree, again found using a logarithmic transformation of the coefficient. A disadvantage of using this particular category (PhD / professional degree) is that we are unable to distinguish between those with a PhD and those with a professional degree. It may be the case that many of the respondents in this category were PhD holders, in which case they would be relatively new to the job market compared to the holders of Master's degrees at the time data for their adult salary was taken. In this case the age-earnings profile of a PhD holder may have not seen much of an increase compared to those who have lower degrees. For this reason, the coefficient of PhD may not be an accurate representation of the income returns to education that a PhD truly provides. For this reason, in addition to the fact that the 1979 cohort did not include this category, the indirect pathway of a holding a PhD/Professional degree has been omitted in the total effect equation.

In order to measure the *total effect* of being in poverty as a youth on income as an adult using the intervening pathway of education, the change in likelihood that one obtains a higher degree given they were in poverty as a youth was also obtained. In the following tables, the dependent variable was a dummy variable indicating the possession of a particular level of education.

Table 3: Regression results for education equations

1979	Coefficient (HS-diploma)	Standard Error	Coefficient (Bachelor's)	Standard Error	Coefficient (Master's)	Standard Error
Constant	.726***	.008	.194***	.006	.022***	.002
Male	-.075***	.009	-.013**	.007	-.001	.002
Hispanic	-.041***	.013	-.094***	.010	-.010***	.003
Black	.050***	.011	-.079***	.008	-.015***	.003
Poverty	<u>-.114***</u>	.011	<u>-.058***</u>	.008	<u>-.002</u>	.003

*** = Significant at the .01 level, ** = Significant at the .05 level, * = Significant at the .1 level

Table 4: Regression results for education equations

1997	Coefficient (HS-diploma)	Standard Error	Coefficient (Bachelor's)	Standard Error	Coefficient (Master's)	Standard Error
Constant	.290***	.009	.317***	.007	.088***	.004
Male	.009	.010	-.078***	.008	-.032***	.005
Hispanic	.093***	.013	-.106***	.011	-.035***	.006
Black	.100***	.012	-.102***	.010	-.026***	.006
Poverty	<u>-.006</u>	.014	<u>-.128***</u>	.012	<u>-.036***</u>	.006

*** = Significant at the .01 level, ** = Significant at the .05 level, * = Significant at the .1 level

It is interesting to note that being in poverty decreases the likelihood of obtaining every level of education included as a dependent variable in one of the education regression equations. Each of the *In_Poverty* coefficients was significant except for High School Diploma for the 1997 cohort and Master's Degree for the 1979 cohort. These coefficients do not need to be transformed, as they are not predicting the natural log of a

number. The 1979 cohort saw a 5.8% decrease in likelihood of obtaining a Bachelor's degree as a result of growing up in poverty. For the 1997 cohort this number is more than doubled to 12.8%. This is a rather striking result, however it confirms what we expected, that those who grew up in poverty in the more modern cohort were less likely to obtain a college degree. This paper hypothesized this would occur as a result of the rising real cost of a college education. While the 1997 cohort saw a decrease in likelihood of obtaining a bachelor's degree relative to the 1979 cohort, the opposite was true of a high school diploma. Those who were in poverty as a youth in the 1979 cohort had an 11.4% decrease in likelihood of getting their high school diploma, while there was no statistically significant relationship between the two variables for the 1997 cohort.

In addition, it can be seen that as the level of educational attainment rises, the coefficients decrease. For example, the coefficient for Bachelor's degree for the 1997 cohort is -.128, while the coefficient for Master's degree is -.036. This seems counterintuitive at first, as one would expect a lower likelihood that one who grew up in poverty obtains a Master's degree than the same person obtaining a Bachelor's degree. However, when interpreting these results it is important to remember how the dummy variables have been defined. In this case, every individual with a Master's degree also has a "1" for Bachelor's degree. The coefficient of -.036 then, should be interpreted as a 3.6% decline in likelihood that one who grew up in poverty would obtain a Master's degree, *provided* that they already have a Bachelor's degree. This is due to the fact that for a significant portion of the impoverished youths, their decline in likelihood of obtaining a Master's degree has already been accounted for by their lack of a bachelor's degree.

In order to quantify the total effect of being in poverty as a youth on the income one obtains as an adult, the coefficients of “In_Poverty” in the education equations must be multiplied by the corresponding coefficients in the earnings model transformed into percentages and added together along with the direct effect.

$$Total\ effect = \alpha_1 + \alpha_5 * \beta_1 + \alpha_6 * \gamma_1 + \alpha_7 * \delta_1$$

We include these indirect effects in order to quantify the amount of income lost due to the lower levels of educational attainment in the impoverished population. The α_6 term in the above equation is the coefficient of the dummy variable in the *earnings model* transformed into a percentage, which represents the additional income received as a result of having a Bachelor’s degree over a high school diploma. This term is multiplied by γ_1 , which accounts for the lower levels of education attained by those who grew up in poverty. The product of those two coefficients gives the decline in income that we observe as a result of being in poverty on income as an adult through the indirect pathway of a Bachelor’s degree. The indirect effects can be seen in table 5. The standard error of these indirect effects, which is the product of two coefficients, is not known. A method for determining the standard errors of the indirect effects, and therefore total effects should be implemented in the future. This paper has standard errors for each of the individual coefficients which make up the indirect effects, therefore we are able to proceed with fairly good certainty that the indirect effects and total effect is significant based on the individual components significance, however a method to quantify the standard error of the total effects is ideal.

Table 5: Indirect effects

	HS-Diploma	Bachelor's	Master's
1979	-.0413	-.0435	-.0008
1997	-.0005	-.0576	-.0038

The largest indirect effect is the loss of income due to not obtaining a bachelor's degree for the 1997 cohort. The indirect effects for each cohort were added to the *direct effect* to obtain the *total effect*. The *total effect* for the 1979 cohort was -.381 and the *total effect* for the 1997 cohort was -.374.

V. Conclusions

The results of this study support the first hypothesis proposed, that those who grew up in poverty would experience lower levels of income as adults. This was true of both the 1979 and 1997 cohorts. These results are expected within the framework of human capital theory. They support the theory that families with more disposable income are able to invest more in their children, which will raise their human capital, and therefore their wages. An explanation for these results in the context of the model provided by Becker and Tomes (1979) is that when maximizing the cross generational utility functions, families in this study with more income were able to invest more heavily in their children's human capital, while still tending to their immediate needs. Along with being in agreement with the theory, these results are similar to the results of studies done previously. Peters' paper asked the question, "Does there exist a culture of poverty that is passed on from parents to children?" (Peters, 1992, p. 456). The result of Peters' study is that changes in parent's income can explain about 10% of changes in

income as adults for their children. This suggests that the answer to the question posed is yes. My study also suggests that there is a culture of poverty that is passed on from parents to children. The results of the study conducted by Corcoran et al. (1992) were that being from a low-income family had negative effects on future income. My study is in agreement with those results.

The second hypothesis of this paper was that the 1997 cohort of NLSY respondents would show less upward income mobility than the 1979 cohort as a result of obtaining lower levels of education relative to their non-impooverished peers. Our results however show that the total effect of being in poverty as a youth on income as an adult were almost identical between the two cohorts. The reasoning behind the second research hypothesis was that the 1997 cohort of impooverished youths would face a higher relative disincentive to attend college than the 1979 cohort, and therefore obtain college degrees at a lower rate relative to their non-impooverished youth counterparts. Indeed this study found that the decrease in likelihood of obtaining a college degree due to being in poverty for the 1997 cohort was greater in magnitude than for the 1979 cohort. It was found that those who grew up in poverty were 5.8% less likely to obtain a Bachelor's degree than those who did not grow up in poverty in 1979. Only 18 years later, that number had risen to 12.8%. Therefore the effect that was expected from education was observed, even though the total effect of being in poverty was very similar between the two cohorts. While the total effect was very similar, the components of the total effect were very different, the main difference being the indirect pathway of a high school diploma, which was not expected. For the 1979 cohort the indirect effect of a high school diploma was nearly as large as the indirect effect of a Bachelor's degree, while for the 1997 cohort this

indirect pathway had almost zero effect. If the indirect pathway of a high school diploma were not accounted for, the 1997 cohort would show a larger total effect as hypothesized.

It seems as though the U.S has made strides when it comes to leveling the playing field to obtain high school diplomas, but the opposite is true of Bachelor's and Master's degrees. The combined effects of the indirect pathways of Bachelor's and Master's degrees contributed to a 4.43% decline in income for the 1979 cohort, and a 6.14% decline in income for the 1997 cohort. A college degree is something that many people strive for in the United States, and these results suggest that not all youths are on equal footing when it comes to attaining that goal. Provided our country does not want this trend to continue, policy decisions should keep these results in mind. Ideally, there would be no statistically significant relationship between poverty status and education level. One way to make sure everyone has the same opportunity to be prepared for college would be to give every student access to the same school resources such as books and computers. One policy that would level the playing field in this way would be to fund public schools through tax income at the state level evenly, as opposed to funding them through taxes locally. This system causes the schools in high-income areas to have access to the best resources, when in reality it may be the schools in low-income areas that need access to those same resources even more.

In the future, this work can be expanded in order to include intervening variables other than education. It is possible that being in poverty causes youths to have other qualities that lead to lower incomes such as participation in juvenile criminal activity, substance abuse and health levels as examples. If other indirect pathways are found these

could be used to assist in policy decisions that can help to decrease the magnitude of the relationship between ones poverty status as a youth and their income as an adult.

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