



4-2010

Intergenerational Transfer of Human Capital among Immigrant Families

Kelsey Hample, '10
Illinois Wesleyan University

Follow this and additional works at: <https://digitalcommons.iwu.edu/parkplace>

Recommended Citation

Hample, '10, Kelsey (2010) "Intergenerational Transfer of Human Capital among Immigrant Families," *The Park Place Economist*: Vol. 18
Available at: <https://digitalcommons.iwu.edu/parkplace/vol18/iss1/10>

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Intergenerational Transfer of Human Capital among Immigrant Families

Abstract

An important implication of the increasing number and diversity of immigrants is the exponentially increasing number of immigrant descendants, especially those who have not fully assimilated to American culture. As this number grows, it becomes increasingly important to study the differences in human capital that immigrants offer compared to natives, and how that human capital benefits their children. Once this is understood, policy can be enacted both to increase the efficiency of these benefits and to try to translate these benefits to native children. For instance, if being bilingual greatly increases the earnings of second-generation immigrants, scholarships could be given to bilingual individuals and policy could be enacted to increase secondary language acquisition in schools. This study will analyze the effect of having immigrant parents on the next generation's earnings.

Intergenerational Transfer of Human Capital among Immigrant Families

KELSEY HAMPLE

I. Introduction

According to 2006 United Nations estimates, 3 percent of the world's population were living as immigrants in countries other than where they were born (Borjas, 2008). In the United States immigration is an especially important issue. It has been a leading political topic for many years, and since the relaxation of the stringent 1920s quota system brought on by revisions to the Immigration and Nationality Act beginning in 1965, the number of immigrants has climbed to new heights. In 1970 the foreign-born population in America was 4.7% of the population, and in 2003 it had increased to 11.7% (U.S. Census, 2009). The population of immigrants in America has also changed dramatically since the 1950s. Early populations consisted mainly of Europeans and Canadians followed by Latinos, while later groups hold a majority of Latinos followed by Asians.

An important implication of the increasing number and diversity of immigrants is the exponentially increasing number of immigrant descendants, especially those who have not fully assimilated to American culture. As this number grows, it becomes increasingly important to study the differences in human capital that immigrants offer compared to natives, and how that human capital benefits their children. Once this is understood, policy can be enacted both to increase the efficiency of these benefits and to try to translate these benefits to native children. For instance, if being bilingual greatly increases the earnings of second-generation immigrants, scholarships could be given to bilingual individuals and policy could be enacted to increase secondary language acquisition in schools. This study will analyze the effect of having immigrant parents on the next generation's earnings.

II. Review of the Literature

One differentiation to make before beginning this study is that of ethnic differences, or acculturation, and assimilation. Hum and Simpson (2007) along with Djajic (2003) argue that while ethnic differences of immigrants and their children and grandchildren persist over time, immigrant descendants can still assimilate to native levels of education, labor force participation, and ultimately earnings. Thus, a person may have fully assimilated economically speaking, but may still have different cultural values and practices. It is important to understand that to fit into our economic system, immigrants do not need to adopt an American culture. In light of this distinction, the present research will maintain a distinction between culture and economic assimilation, and only analyze assimilation.

The theory of "regression towards the mean" accounts for some of the improvement second-generation immigrants experience over their parents, but not for improvement beyond natives. Theoretically, second-generation immigrants should do better than their parents who perform below the mean, but they should not, by simple law of regression towards the mean, perform above the average. Previous research can be divided into two separate schools of thought on this issue. Some work, especially early research, supports the theory that there does exist some variable that causes second-generation immigrants to outperform natives, while other studies conclude that the apparent phenomenon is solely regression to the mean and that second-generation immigrants do not perform above the mean.

In early work on the subject, there is assumed to be something unaccounted for that gives them the extra boost for second-generation immigrants who outperform comparative natives (Borjas, 2006).

There are several theories explaining why second-generationers outperform their native counterparts and parents. Djajic (2003) proposes that while immigrants are at the mercy of discrimination and are likely to settle for a low-wage job, their children feel that they deserve what they earn, and will not accept discrimination, thus earning higher wages than their parents. Complementing this line of reasoning is the theory that immigrants have very high levels of motivation and pass them on to their children. This accounts for second-generation immigrants earning more than their native counterparts and, thus, regressing beyond the mean.

Borjas (2006), searching for the unaccounted boost above the mean, summarized the immense evolution that research on this subject has undergone over the years. Early work considered members of three different generations (immigrants, second-generationers, and third-generationers) within the same census year. The problem here is that the various groups can biologically not be descendants of each other. Cohorts, or groups of immigrants who arrive at a particular time, often have different characteristics. Results from this single-census methodology may offer misleading conclusions.

Subsequent research improved upon this flaw by gathering data from different census years. For instance, immigrant data was collected from the 1940 census while second-generation information was obtained from the 1970 census. Thus, it can be assumed that many of the second-generation immigrants are direct descendants of the 1940 immigrants (Borjas, 2006). Hum and Simpson (2007) concluded that early research, with the single-census design, found second-generation immigrants to outperform their parents and their children, while later research, conducted over time, found the second- and third- generation immigrants inherit the disadvantage faced by their ancestral immigrants, which begins to support the theory of regression toward the mean. The later experimental design is a clear improvement upon earlier research, offering different results, but there is still no direct link between a specific set of immigrant parents and a specific second-generation immigrant. Social implications can also have an effect. For example, research has found a large increase in labor force participation among second-generation women over time, but this does not account for the general increase across the society. Thus, the increase cannot be solely attributed to the fact that these second-generation immigrant women work much more than second-generationers from previous cohorts. To this end, the factual difference between the two cohorts is probably overstated (Borjas, 2006). Because inter-cohort differences are likely

not as extreme as they are presented to be, the argument for regression toward the mean can be despite supposed improvements by second-generation immigrants past the average of natives.

Galarneau and Morissette (2009) found that immigrants who are established in Canada tend to face the same disadvantages as new Canadian immigrants. Furthermore, they found that even with higher levels of education, established immigrants are still placed in low-skilled jobs. Though it also supports regression toward the mean, or at least argues against regression over the mean, these results are in contrast to the majority of other regression-toward-the-mean literature, which concludes that the longer an immigrant lives in a country, the more he or she learns about the culture, including language, training, and job information.

Contrary to Galarneau and Morissette, a study in 2009 found that immigrants are more likely to be over-educated or under-educated for their jobs than are natives (Chiswick & Miller, 2009). Over-education among immigrants is due to the imperfect transferability of human capital across nations and diminishes over time as the workers can prove their qualifications. Under-education occurs when immigrants specialize in a specific skill or substitute immense motivation to accommodate their lack of education. This situation tends to be stable over time (Chiswick & Miller, 2009). This work does not allow for all second-generation immigrants to improve beyond natives, but does allow for some under-educated workers to specialize and, based on the standard policy of controlling for education in measuring earnings, appear to rise above the native mean.

In support of the over- and under- education theory, Roy's Model argues that immigrants tend not to be average representatives of their origin countries. Because the move to America is not geographically difficult or expensive, and American social institutions may be beneficial to them, immigrants from nearby and poor nations likely possess a lesser amount of education, experience, and general human capital than the average citizen of their countries (Borjas, 2008). In the case of Mexico, for instance, a poor person who does not receive a lot of government assistance can move to America and begin to receive monetary aid. Thus, a Mexican with low human capital may be benefited from living in the United States, even when they do not expect to obtain a high-skill job. This is an example of negative selection in immigrant flows.

People from faraway nations, demonstrating positive selection, tend to represent above-average levels of

human capital, relative to their national averages. This is partially due to the fact that it is simply much more expensive to move across an ocean, for instance. With regard to social institutions, citizens of more socialist countries, for instance Scandinavians, will be further benefited if they can expect to be among high wage earners in America because taxes tend to be lower (Borjas, 2008). Thus, Roy argues that the phenomenon of watching second-generation immigrants perform above the native mean can be attributed to selection and that they may be regressing toward the mean of their parents which, in the case of positive selection, is higher than natives.

III. Theoretical Model

To analyze the earnings of second-generation immigrants, the most appropriate theoretical framework to use is human capital theory. The basic theory is that, as with a firm, individual people invest in themselves, through education for example, in the hopes of reaping higher returns, often in the form of income. These investments in human capital produce all the income generating skills and productive knowledge the person has.

This concept of “the productive capacities of human beings as income producing agents in the economy” was made an important topic of study in Adam Smith’s *The Wealth of Nations* wherein he argued that improvements in workers’ skills, and thus productivity, would lead to an increase in both economic progress and welfare (Rosen, 2008). Of special importance to the analysis of second-generation earnings is Alfred Marshall’s work, which stated that human capital investments are long-term and emphasized the function of the family as a unit in acquiring these skills and knowledge (Rosen, 2008). This results from the motivation of parents to invest in their children in the hopes of securing them higher earnings in the future. The present project will use Marshall’s theory in predicting the success (measured in earnings) of second-generation children based on the human capital and investments of their parents.

One implication of human capital theory is that as the second-generation acquires more U.S.-specific human capital than their parents, they should experience upward income mobility and some sort of regression toward the mean. Barry Chiswick studied intergenerational mobility of human capital among immigrants and their native-born children. He found that while immigrants earn much less than comparable natives, their second-generation children earn more than comparable natives. He also found that by the third-generation, immigrant

grandchildren earn an amount equal to natives (Rosen, 2008). This supports the statistical theory of moving toward the mean: that inherited human capital of immigrant families will regress towards native levels.

The work of Chiswick acts as a foundation from which the current analysis of second-generation earnings, based on parental human capital, will grow. Using his findings along with previous work in the field, for example Marshall’s theory of long term investment, intergenerational mobility of immigrant and native human capital can be further analyzed, and policy implications may be considered to increase the human capital a family can provide to future generations. Upon full review of the literature and complete understanding of the theory of human capital, it is hypothesized that second-generation immigrants will attain higher levels of education and thus record higher earnings than immigrants, and possibly natives, due to their high level of human capital contributed to by their immigrant parents.

IV. Data

The data used in this study is from the National Longitudinal Survey of Youth beginning in 1979 (NLSY79). The data set follows 12,686 men and women who were between the ages of 14 and 22 years old in 1979, and contains information about family history, education, marital status, aptitude, high school transcript, and specific labor force participation. It is assumed that most of these participants lived at home at the time of the interview or shortly before it, and thus reflect the direct influence of their parents, in 1979. Both children born in the U.S. to immigrant parents (second-generation immigrants) and children born to non-immigrants (natives) will be included to compare across these groups.

This data source is rich and will enable the analysis of specific variables. The sample size is very large, and because it is over-representative of minorities, it contains 193 immigrant families. The data includes a variable for which ethnic or racial origin the respondent identifies with the most. Within this study, cultural identity can be helpful because it captures the respondent’s interest in his or her culture, and thus can be used to predict whether or not the child indulged in the parental immigrant human capital or denied it. The thirty possible responses were divided into six distinct categories: European, Hispanic, Black, American, Other, and Asian (detailed in Appendix 1). In the context of Roy’s Model, only the Hispanic category represents immigrants who will tend to underperform natives

and Hispanic national averages (Borjas, 2008). This is because of the “negative selection” of the Latin American immigration flow that was discussed earlier.

The data is also very carefully collected and can be trusted. Possibly the most important aspect of it, however, is that it is longitudinal. This gives access to good data about family history and the environment of participants at a young age, when

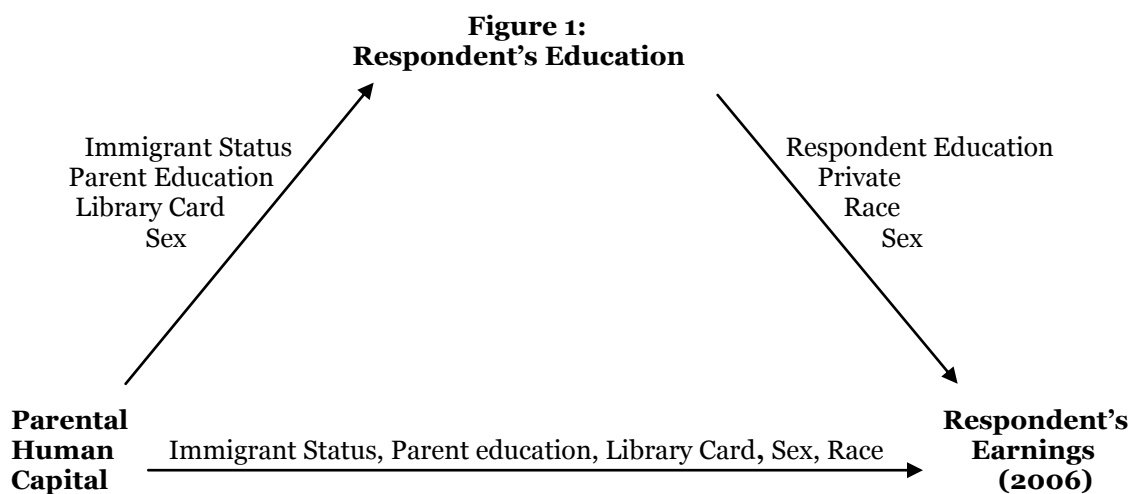
V. Empirical Models

The research in this paper will use longitudinal data so that the second-generation immigrants are guaranteed to be exact descendents of the original immigrants, and, furthermore, so that they can be correctly matched to their immigrant parents. This will also reduce cohort bias found in cross-sectional census studies that were critiqued by Borjas (2006). This is an important advantage that this data set and empirical design offer over previous research. With this design, characteristics of specific immigrants can be directly linked to the characteristics of their children, rather than stretching this connection from one cohort to another.

Four basic models will be presented to offer specific understanding of the research problem, followed by two more models to illustrate indirect subtleties. Following from the work of Blau, Kahn, Liu, and Papps (2008) on intergeneration transmission, this study will use several regressions, including and excluding certain variables, to identify patterns across groups and relationships between variables. The goal of this project is to measure the

they are presumably inheriting human capital from their parents, as well as accurate data about earnings when the participants are settled into the labor market. The dependent variable being measured, Earnings, as well as Respondent Education, will be obtained from the same data set, but in the year 2006. A full review of the variables obtained from the data set is located in Appendix 2.

intergenerational transfer of human capital from parents to their children. Visually, the empirical design of this project can be illustrated with a triangle. The direct regressions, running along the bottom of the triangle, map the relationship between the parental human capital of a respondent to his or her earnings in 2006. This is the general effect that background variables, specifically parental education and characteristics of the respondent’s childhood home, have on the respondent’s future earnings. The indirect regressions further explain the phenomenon of intergenerational transfer of human capital by breaking it into two distinct steps. First, parental human capital is predicted to effect respondent’s education, shown as the left side of the triangle. Second, the respondent’s education, regardless of the previous background variables, will affect the respondent’s earnings. Thus, the parents’ human capital, specifically their education, is seen to indirectly affect the respondent’s earnings by first affecting the respondent’s education, which in turn affects earnings.



Model 1 measures the full effect of immigrants' human capital on their children's earnings.

Model 1:

2nd Generation Earnings = f (Immigrant Parents, Parent Education, Library Card, Private School, Respondent Sex)

Respondents is categorized as second-generation immigrants if one or both of his or her parents is an immigrant, otherwise he or she will be considered a native (this includes respondents who did not know the origin country of one or both of their parents). The Immigrant Parents variable measures the effect of having immigrant human capital available on future earnings, and thus, is the primary variable of interest in this study. Controlling for immigrant status, Parent Education is predicted to be the most powerful variable in predicting respondent earnings due to extensive literature showing a strong correlation between it and child earnings (Perreira, Harris, & Lee, 2006). The presence or absence of a Library Card serves as a proxy for parental motivation. Having a library card signifies motivation by an adult either to increase his or her knowledge, or possibly to increase that of the entire family. Finally, a dummy variable for Private School, versus public, is also included. This represents a measure of "school capital," which can have a positive effect on educational attainment (Perreira, Harris & Lee, 2006).

Model 2 has the same variables as the first, but also includes controls for the child's racial identity. These are included to determine if specific patterns exist across the demographic characteristic, or if results are amplified or augmented depending on racial identity.

Model 2:

2nd Generation Earnings = f (Immigrant Parents, Parent Education, Library Card, Private School, Race, Respondent's Sex)

Model 3 removes the demographic control (Race) added to Model 2, but incorporates more sophisticated measures of immigrant status.

Model 3:

*2nd Generation Earnings = f (Immigrant Parents, Parent Education, Library Card, Private School, Immigrant Status * Parent Education, Immigrant Status * Library Card, Immigrant Status * Private School, Respondent Sex)*

Three interaction variables are created by multiplying immigrant status by each of the other measures of human capital (Parent Education,

Library card, and Private School). These identify the specific effects of each of the human capital variables, for example parent education, on second-generation immigrants as compared to natives. It is possible that native human capital ultimately affects the earnings of respondents differently than immigrant human capital, and these variables will capture that differentiation. For natives, each of the variables will take a value of zero because Immigrant Status will equal zero. This means that the coefficient each of these interactions has is specific to second-generation immigrants. Summing each of the interaction coefficients with the coefficient of the original human capital variable, for instance Immigrant Status * Parent Education with the original Parent Education, provides a more accurate prediction of immigrant earnings. These interactions are added into the regression one at a time in order of predicted importance. This way, the full effect of the most important interaction can be measured in isolation, and then the full effect of each of the two most important interactions, and finally the effects of all three. This enables the identification and selection of the significant interactions for the final model.

In the same tradition as Model 2, Model 4 again incorporates the controls for the respondent's racial identity. While this is the most complete model in terms of controls, a lot will be learned from the differences between all four models. Patterns will be easily identified in comparison of the models, and insights can be drawn as to how predictive any variable is in the context of a certain set of others.

Model 4:

*2nd Generation Earnings = f (Immigrant Parents, Parent Education, Library Card, Private School, Immigrant Status * Parent Education, Immigrant Status * Library Card, Immigrant Status * Private School, Race, Respondent's Sex)*

Within the available data, a variable for foreign language, a dummy that signified whether a language other than English was used in the respondent's home during his or her childhood, could not be included because there was too much correlation between having a foreign language and being the child of an immigrant. Because of this, the interaction variable used to measure verbal ability of the respondent, the foreign language dummy variable multiplied by a dummy variable defined by what language the initial 1979 interview was conducted in, was also removed from analysis. The theory behind these variables, however, is still important. Speaking more than one language would be beneficial both in general verbal skills and as a special skill in the labor market, measured by the

first variable, but relatively worthless without English proficiency, measured by the interaction term.

Along with the previous four models, I will use two more regressions to further analyze the indirect transfer of parental human capital to the second-generation. Specifically, the first regression will identify the effects of parental human capital on the respondent's level of education, and the second will show the effect of the respondent's level of education on his or her earnings.

Respondent capital will be effective in predicting respondent success because these are the skills offered in the labor market. Level of respondent education is included because of extensive research that reveals high correlations among educational attainment and earnings. The inclusion of these respondent human capital variables would reduce the coefficients, or measured effect, of parental capital in the previous models, but are ultimately seen as indirect paths of that capital. While the previous models shows the direct effect of parental human capital on child earnings, this model is more specific in showing how the capital is transmitted. For instance, high education attainment of parents is expected to increase child education, which will ultimately affect child earnings.

Indirect Regression 1:

*Respondent Education = f (Immigrant Status, Parent Education, Library Card, Immigrant Status * Parent Education, Race, Respondent Sex)*

The second regression, predicting respondent earnings from respondent education, will include the dummy variable for public or private school because that will likely be important in predicting earnings. Assuming that private schools offer a better quality of education, they should also lead to higher wages in the labor market.

Indirect Regression 2:

*Respondent Earnings = f (Immigrant Status, Respondent Education, Private, Immigrant Status * Parent Education, Race, Respondent Sex)*

The above regressions will be compared to each other to determine the explaining power of the variables that are added and subtracted. Alone, any of the regressions can show a difference between second-generation immigrants and their native counterparts, but this study hopes to go beyond describing these differences. The comparison of several regressions will allow conclusions to be drawn about how powerful certain variables are and how they affect members of diverse groups differently.

VI. Results and Discussion

Simple descriptive statistics shown in Table 1 are a powerful tool to begin this analysis of the different effects immigrant and native parent human capital have on their children. Within the data set, second-generation immigrants do earn significantly more than natives and obtain significantly higher education levels. This supports the observations of much of the previous research, notably Djajic (2003), that second-generation immigrants surpass the native average, thereby regressing beyond the mean. It also contests the theory offered by Chiswick and Miller (2009), that second-generation immigrants tend to be under-educated and must specialize to obtain higher earnings, because the descriptive statistics show that second-generation immigrants' levels of education and earnings are both higher than those of natives. Consideration of parental education, the main variable representing parental human capital, undermines the assumption offered that parental education leads to respondent education (Perreira, Harris, & Lee, 2006). In this sample, immigrants record significantly lower levels

of education than their native counterparts. Thus, second-generation immigrants are propelled into higher above average earnings by something other than parental education.

Second-generation immigrants are significantly more likely to attend private high schools, but this cannot be considered a basic cause of success. Several private high schools require students to apply by taking a standardized test. Because of this, enrollment in private school may reflect basic aptitude, rather than cause future success. Furthermore, the second-generation immigrant sample in this data set contains a significantly larger percent of Hispanics. In accordance with Roy's Theory, this is unexpected. Because Hispanic countries are closer to America than Europe and Russia, Hispanic immigrants should display negative selection and consist of below-average performers (Borjas, 2008). Thus, there is definitely something unaccounted for within this set of variables that causes second-generation immigrants to seek higher education and ultimately earn greater wages.

Table 1: Descriptives of Second-Generation Immigrants and Natives (Standard Deviation)

	Second Generation Immigrants			Natives		Mean Difference t-test
Dependent Variable:						
Wages and Salaries	\$46,819.72	(50535)	>	\$37,112.84	(45517)	-2.87**
Independent Variables:						
Parent Education	8.86	(5.09)	<	11.92	(3.104)	12.86***
Respondent Education	14.05	(2.583)	>	13.29	(2.443)	-4.29***
Library Card	74%	(0.439)	>	71%	(0.455)	-0.98
Private School	12%	(0.331)	>	5%	(0.217)	-4.67***
Hispanic	66%	(0.474)	>	43%	(0.495)	-6.45***
European	17%	(0.373)	<	45%	(0.498)	7.87***
Black	2%	(0.124)	<	33%	(0.469)	9.19***
Female	46%	(0.500)	<	51%	(0.500)	1.45
Not Used: Foreign Language	93%	(0.253)	>	16%	(0.363)	-29.21***

A possible explanation of second-generation immigrant performance that cannot be tested here is the role of language in child development. Following the earlier argument regarding multilingualism, speaking a second language may improve verbal skills at an early age and have a positive effect on educational attainment. In this data set, bilingualism cannot be used as a variable because the Foreign Language variable was too highly correlated with Immigrant Status.

Table 2 compares models 1, 2, and 4. Models 1 and 2 measure the effects of background parental human capital on the future earnings of each respondent, with Model 2 including controls for race. Both of these regressions predict that having immigrant parents increases future earnings by around \$15,000. This supports the descriptive statistics that showed higher earnings for the second-generation immigrant population over natives. Parental Education is also shown to have a positive effect of just under \$3,000 of extra respondent earnings per each year of additional schooling that the parent obtains. That is, for each additional year of education the parent has, the child will eventually earn nearly \$3,000 more. The existence of a Library Card in the child's home and attending Private School each add about \$7,000 to predicted future earnings. Females tend to earn around \$21,000 less than males in both of these regressions. This is not necessarily an indication of discrimination because all earnings, including those of women who choose not to work, are included in the regression. The earning differential likely reflects a general preference of women to work less than men, perhaps because of childrearing responsibilities.

Model 2 allows for differences in earnings to be correlated with racial identity. Compared with respondents who identified as American or European (as defined in Appendix 1), only Black respondents are significantly likely to earn less. While the coefficient for Hispanics is also negative, it is not significant. The coefficients for Asian and Other are both positive and insignificant. This may be due to the fact that within this data set, these populations are very small (0.5% and 2.5% respectively).

Model 3 was used to determine which interactions are most powerful in explaining second-generation immigrant earnings. The results, offered in Appendix 3, led to the inclusion of the Imm*Parent Education interaction variable, which measures the effect that one additional year of average parental education (for both immigrants and natives) has on second-generation immigrants.

To fully understand the effect of parental education on second-generation immigrants, however, the coefficients of the two parental education variables must be summed. Parental Education records a positive and significant coefficient of around \$3,000 per additional year, but Imm*Parent Edu does not. Adding the two education variable coefficients, \$2,843 and -\$1,562, it is clear that as the education level of immigrant parents' increases by one more year, second-generation immigrants only earn \$1,281 more than natives. This is much lower than the originally predicted \$2,742 without including the interaction variable (from Model 2). Second-generation immigrants still earn more than natives, denoted by the positive sign of the added variables, but native parents have higher levels of education.

This is an important finding because it implies that second-generation immigrants are not as responsive to their parents' education levels as are natives because they are not bound by the low attainment of immigrants. Thus, Perreira, Harris, and Lee's work (2006) predicting a strong correlation between parent education and child education does not hold when the culture of the child changes. The correlation may still hold true isolated in different cultures, but the results here suggest that it does not

hold for immigrants and their American-born children. If low parental education does not restrict the economic benefit of immigrants' children, immigration policy should not rely heavily on adult education. Though some argue that immigrants should have to demonstrate a certain aptitude to be allowed entrance into America, results with this data set suggest that educational controls on immigrants will not be important in determining the income of their children.

Table 2: The effect of parental human capital on respondent earnings (t-statistic)

	Model 1:		Model 2:		Model 4:	
Constant	8113.6***	(3.65)	14574.8***	(5.63)	13384.7***	(5.06)
Immigrant Parents	17765.4***	(5.29)	14863.0***	(4.32)	29043.4***	(4.13)
Parent Education	2957.5***	(16.59)	2742.9***	(14.26)	2843.1***	(14.42)
Library Card	7027.1***	(5.61)	6110.5***	(4.88)	6052.5***	(4.84)
Private School	7472.3**	(3.08)	6839.3**	(2.83)	7073.4***	(2.93)
Female	-21714.0***	(-20.03)	-21754.0***	(-20.17)	-21739.0***	(-20.16)
Imm* Parent Education					-1562.7*	(-2.31)
Hispanic			-1303.4	(-0.68)	-1505.5	(-0.78)
Black			-8829.9***	(-4.48)	-8534.1***	(-4.33)
Asian			6455.1	(0.81)	6958.8	(0.38)
Other Race			1455.5	(0.67)	1607.5	(0.64)
Parent Edu* Imm	2957.5		2742.9		1280.4	
Parent Edu						
Sample Size	6447		6447		6447	
Adjusted R²	.114		.123		.124	
*** significance at the .01 level ** significance at the .05 level * significance at the .10 level						

Furthermore, Model 4 shows that having immigrant parents increases the predicted earnings of a respondent by around \$30,000, *ceteris paribus*. Having a library card available in the house and attending a private high school both increase predicted earnings by more than \$6,000. Again, females in this data set tend to earn \$20,000 less than males, though this may be attributed to several other social factors as mentioned earlier. As in Model 2, only respondents who identified as Black can be predicted to earn \$8,000 less than American or European identifiers.

The indirect regressions, reported in Table 3, give more insight into the path of intergenerational transmission. The Indirect 1, measuring the effect of parental human capital on respondent education, proves that the effect of parental education is not significant for any racial identity. This means that no racial identity has an advantage over another with all other measures of parental human capital held constant. *Ceteris paribus*, second-generation immigrants have around 3.6 more years of education than natives, and the availability of library cards leads to an increase of more than half a year of

schooling. Here, parental education has a positive effect on educational attainment of respondents for the sample as a whole, but not for second-generation immigrants. While an additional year of parental education generally leads to an additional 0.33 years of respondent education for the entire sample, second-generation immigrants only experience half (0.15 years) of that advantage.

This is an important conclusion because it requires further consideration of what causes second-generation immigrants to seek higher levels of education than natives, if it is not due to their parents' education levels. One possible explanation is that the children of immigrants are more likely to speak a foreign language, and that being multilingual is beneficial. Specifically, speaking a second language may increase verbal ability and, in the long run, make education easier or more available. High verbal skills can increase the probability that a student will attend college because he or she will likely be accepted to more schools, and possibly receive more or larger scholarships. Another explanation, and one borrowed from Djiajjic (2003) is that some sort of "American Dream"

motivates immigrants and/or their children to try harder. If they believe that America offers more opportunity, first- and second- generation immigrants may feel obligated to take advantage of those opportunities, an important one being education.

These results also show that females, *ceteris paribus*, tend to have an additional one-third of a year of education compared to males. This may not be an obvious match to the lower earnings earned by females in Table 2, but preferences must be considered. Though this analysis has not tested for it, it is possible, and probable, that many women

prefer to work less than men for cultural reasons or to take care of children.

Finally, this set of regressions allows for a comparison across racial identities. The results, *ceteris paribus*, demonstrate that racial identity does not significantly affect educational attainment. Hispanic, Black, and Asian respondents do not significantly obtain more or less education than American and European respondents. This is presumably another argument against Roy's theory, which would predict the Hispanic group, via negative selection, to have lower education levels.

Table 3: The indirect path of human capital transfer (t-statistic)

	Indirect 1: (Respondent Education in Years)	Indirect 2: (Respondent Earnings in Dollars)		Indirect 1 Continued:	Indirect 2 Continued:
Constant	8.79*** (68.71)	-37752.1*** (-13.01)	Respondent Education		6822.2*** (32.86)
Immigrant Parents	3.63*** (9.77)	-966.0 (-0.15)	Hispanic	0.10 (1.09)	-5109.6** (-3.06)
Parent Education	0.33*** (34.73)		Black	-0.12 (-1.27)	-6090.7*** (-3.45)
Library Card	0.57*** (9.42)		Asian	0.05 (0.14)	5796.0 (0.84)
Private School		2983.4 (1.33)	Other Race	0.68*** (4.01)	-3228.3 (-1.00)
Female	0.32*** (6.14)	-23239.2*** (-23.39)	Sample Size	6801	6701
Imm* Parent	-0.18*** (-5.60)	297.0 (0.48)	Adjusted R ²	.217	.201
Education					
Parent Edu*	0.15				
Imm Parent Edu					

*** significance at the .01 level ** significance at the .05 level * significance at the .10 level

The second indirect regression, describing the effect of respondent human capital on respondent earnings, is promising. The only variable, other than sex and race, that is significant across is respondent education. This confirms that educational attainment is the only variable considered here that significantly affects earnings. Upon further analysis, however, it becomes clear that respondents who identified as Black or Hispanic earn significantly less (\$5,000 and \$6,000 respectively) than the Americans and Europeans. This could be an argument for discrimination, though it has not been explicitly tested here, because after controlling for education, different racial groups do reap largely different earnings. Another explanation is that the members of various racial identities have different working preferences, analogous to the discussion of lower female earnings.

Also enticing in these results is that being a second-generation immigrant does not affect earnings controlling for education. This implies that, holding education equal, second-generation immigrants are not discriminated against based on their immigrant status and they apparently are not more prone to being over- or under- educated than natives. The education of immigrants is also insignificant in predicting the earnings of their children. This suggests that personal human capital is much more predictive than parental human capital in this, the final, stage of intergenerational transmission of human capital. Thus, the improvement that second-generation immigrants have over natives occurs in the first step of the indirect path of transmission, that to educational attainment.

VII. Conclusion

This study provided a detailed analysis of second-generation immigrant earnings compared to those of natives. Following Marshall's work, this project assumed that parents are motivated to invest in the human capital of their children, via their own human capital, in hopes of providing them with the means to be more successful in the future (Rosen, 2008). It also controlled for cohort bias, a common confound in previous work exposed by Borjas (2006), by mapping each respondent earnings directly to his or her parent's human capital. Respondents with immigrant parents, and thus those who received human capital specific to a non-American culture, earn more, measured in wages and salaries, than natives. Though the exact reason for this was not identified, it was concluded that second-generation immigrants surpass their parents' levels of education and earnings, and also rise above native earnings. Thus, the argument for regression toward the mean was refuted: there must be some other variable at work. These results imply that second-generation immigrants are fully assimilated, though not necessarily acculturated following the Hum and Simpson (2007) and Djajic (2003) arguments, to America. Thus, second-generation immigrants are economically efficient in America, and immigration policies should reflect this in their consideration of how many immigrants may move to the United States. Within the second-generation population, Black, and less noticeably Hispanic, respondents tend to do worse than Americans and Europeans.

A mapping of the indirect path of intergenerational human capital transfer established that the advantage second-generation immigrants have affects educational attainment, but that with equal education, they do not earn more than natives. This suggests that some part of the immigrant human capital causes these respondents to attain higher levels of education, and that the labor market operates relatively equally for second-generation immigrants and natives. For natives, parental education is a good predictor of ultimate earnings, but for second-generation immigrants, whose parents have lower education levels, there is some other factor causing them to acquire more schooling. Several explanations were offered; including enhanced verbal abilities caused by multilingualism and a theory involving the "American Dream."

This is an important area of research and requires much more investigation before strong policy implications can be drawn. It is clear, however, that increased education leads to increased earnings for both second-generation immigrants and natives. Thus, increasing education levels, through extrinsic

motivation or compulsory education, will be beneficial both to American citizens and the American economy.

Though this study improves on previous designs by using longitudinal data, there are many restrictions and several improvements can be made. Tests should be run for autocorrelation, multicollinearity, and heteroscedasticity. A more precise understanding of the intergenerational transfer of human capital could be obtained by measuring the strength of each mode of transmission (direct, and each part of the indirect). Roy's theory could also be more accurately tested by including interaction variables between immigrant status and racial identity.

A restriction in this study, due to the sample, was that foreign language cannot be tested. Multilingualism may play a large role in the higher earnings second-generation immigrants' experience, but this study could only theorize about its function. If foreign language is a strong positive predictor of earnings, foreign language programs could be increased throughout the country so that natives could also benefit from this advantage. The data set also restricts the study due to the specific questions asked in 1979. There is no evidence of what country immigrants moved from, so conclusions cannot be made about country-specific human capital. Another disadvantage of the data set is that various measures of aptitude, standardized or IQ tests, were not recorded for very many respondents, thus making them impossible to include in this study.

Future research can also explore the idea of the "American Dream." Though it is not the main focus of this analysis, the existence of such an ideal may cause immigrant families to pursue more opportunities, feel obligated to try harder to be successful, or have better attitudes in general about their life goals. Another course of study on the topic of second-generation immigrant success in America is discrimination. The results from this study give room for discrimination, though it cannot prove or disprove its effect, thus no policy implications in this area can be fully supported. Finally, assimilation can be controlled for in future designs. Immigrants who have successfully assimilated should be able to offer their children American-specific human capital, which should positively effect earnings.

There is still a lot to study in the area of second-generation immigrants, but this research provides a solid foundation to move from by considering previous literature and improving upon the basic empirical design in using longitudinal data and

studying the specific link of human capital transfer within families. The results are promising for America at a time when the immigrant population is

growing and the second-generation immigrant population is booming.

REFERENCES

- Blau, Francine D., Lawrence M. Kahn, Albert Y. Liu, and Kerry L. Papps. 2008. "The Transmission of Women's Fertility, Human Capital and Work Orientation Across Immigrant Generations" National Bureau of Economic Research, Inc, NBER Working Papers.
- Borjas, George. 2006. "Making it in America: Social Mobility in the Immigrant Population" National Bureau of Economic Research, Inc, NBER Working Papers.
- Borjas, George. 2008. "Chapter 9: Labor Mobility." *Labor Economics*, ed. Brent Gordon and Doug Hughes, 321—360. New York: McGraw-Hill/Irwin.
- Chiswick, Barry R. and Paul W. Miller. 2009. "The International Transferability of Immigrants' Human Capital" *Economics of Education Review*, 28(2): 162-169.
- Djajic, Slobodan. 2003. "Assimilation of Immigrants: Implications for Human Capital Accumulation of the Second-generation" *Journal of Population Economics*, 16(4): 831-845.
- Galarneau, Diane and Morissette, Rene. 2009. "Immigrants' education and required job skills." *Perspectives on labour and income*, 2(1): 5-18.
- Hum, Derek and Wayne Simpson. 2007. "The Legacy of Immigration: Labour Market Performance and Education in the Second-generation" *Applied Economics*, 39(13-15): 1985-2009.
- National Longitudinal Survey. 2009. Web-Investigator. <http://www.nlsinfo.org/old-web-investigator/webgator.php> (accessed October 28, 2009).
- Perreira, Krista M., Kathleen M. Harris, and Dohoon Lee. 2006. "Making it in America: High School Completion by Immigrant and Native Youth" *Demography*, 43(3): 511-536.
- Rosen, Sherwin. "human capital." *The New Palgrave Dictionary of Economics*. Second Edition. Eds. Steven N. Durlauf and Lawrence E. Blume. Palgrave Macmillan, 2008. *The New Palgrave Dictionary of Economics Online*. Palgrave Macmillan. 21 September 2009 <http://www.dictionaryofeconomics.com/article?id=pde2008_H000100> doi:10.1057/9780230226203.0754
- U.S. Census Bureau. 2009. US Department of Commerce: Economics and Statistics Administration. <http://www.census.gov/population/www/socdemo/foreign/index.html> (accessed November 12, 2009).

Appendix 1:

The data set contains approximately 49% “European” (English, French, German, Greek, Irish, Italian, Other Spanish, Polish, Portuguese, Russian, Scottish, and Welsh), 25% Black, 13% “Hispanic”

(Cuban, Chicano, Mexican, Mexican-American, Puerto Rican, and Other Hispanic), 9% American (American and None), 3% other, and 1% Asian (Chinese, Filipino, Hawaiian, Pacific Islander, Asian Indian, Japanese, Korean, Vietnamese).

Appendix 2:

Operational Definitions of Variables	
Dependent Variable:	
Earnings (2006)	During 2005, how much did you receive from wages, salary, commissions, or tips from all (other) jobs, before deductions for taxes or anything else?
Independent Variables:	
Parent Education (1979)	Highest grade completed by the parent who completed the most schooling (1979).
Respondent Education (2006)	Highest grade completed as of May 2006.
Immigrant Parents (1979)	1 if one or both of the parents was born outside of the US.
Library Card (1979)	At age 14, did any household member have a library card?
Private School (1979)	Is current or last school where Respondent attended grades 1-12 a public school?
Female (1979)	Sex of Respondent
Racial Identity (1979)	What is your origin or descent? / 1 st racial ethnic origin.

Appendix 3:

The effect of parental human capital on respondent earnings, concentrating on immigrant status (t-statistic)			
	Model 1:	Model 3.1:	Model 3.2:
Constant	8113.6*** (3.65)	6716.5** (2.94)	6685.0** (2.92)
Immigrant Parents	17765.4*** (5.29)	33608.7*** (4.82)	36374.0*** (4.54)
Parent Education	2957.5*** (16.59)	3077.3*** (16.72)	3071.7*** (16.67)
Library Card	7027.1*** (5.61)	6948.3*** (5.55)	7089.3*** (5.59)
Private School	7472.3** (3.08)	7726.2*** (3.19)	7750.7*** (3.19)
Female	-21714.0*** (20.03)	-21697.3*** (-20.03)	-21704.3*** (-20.03)
Imm*Parent Education		-1759.9** (-2.59)	-1610.6* (-2.27)
Imm*Library			-5530.6 (-0.70)
Parent Edu + Imm*Parent Edu	2957.5	1317.4	1461.1
Sample Size	6447	6447	6447
Adjusted R ²	.114	.115	.115
Both Imm*Library and Imm*Private were insignificant when included together or individually with Imm*Parent Edu, thus only Imm*Library is shown.			
*** denotes significance at the .001 level			
** denotes significance at the .01 level			
* denotes significance at the .05 level			

The second one, 3.1, adds a variable, Imm*Parent Education, which measures the effect that one additional year of average parental education (for both immigrants and natives) has on second-generation immigrants. The last regression, 3.2, also adds Imm*Library, measuring the effect of having a library card present in the house has on second-

generation immigrants. Though the empirical model also included the variable Imm*Private, measuring the effect private high school education had on second-generation immigrants, the inclusion of this variable resulted in insignificant coefficients, and thus is not shown.