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Introduction

Reforming education and immigration policies are two heavily debated issues that remain at the top of the US policy agenda. A key indicator of how to approach reforms in education involves measuring the academic achievement levels of the US student age population to determine where education is falling short of success. In regard to immigration, capturing the immigrant experience is an essential element of addressing the ever-increasing influx of immigrant populations that enter the US every year. A large part of that experience can be measured by examining data on the school experience of immigrant children in the US. As the face of immigration and thus the student age population continues to evolve, addressing issues of immigration and education together will continue to offer greater insight into the direction needed for policy reform in both areas.

The purpose of this study is to examine where the largest achievement gaps take place amongst immigrant populations and breaking those gaps down by generation, looking at first and second generation Asian and Hispanic immigrant students. In this case, a first generation immigrant student is defined as a child who is foreign born, whose mother is foreign born and a second generation immigrant student is defined as a child who is native US born and whose mother is foreign born. Asian and Hispanic immigrants were chosen as the focus of this study due to the predominance of immigration to the US from Hispanic and Asian countries. According to migration statistics, Mexican-born immigrants accounted for 29.8 percent of all foreign born living in the US (ASC, 2010). Altogether, Hispanic and Asian countries make up well over 50 percent of those foreign born residing in the US (ASC, 2010). This is in stark contrast to trends seen in the 1960’s when immigration to the US was more likely to come from European countries, accounting for approximately 75 percent (ACS, 2010). In recent decades, there has been a steadily growing number of Latino and Asian foreigners dominating immigration into the US with European immigration on the decline, accounting for only 12.7 percent in 2009 (ACS, 2010). Given the increasing presence of Latino and Asian immigrants in the US it seems appropriate to focus on these groups of immigrants when analyzing the academic achievement of immigrants in the US.

This study departs from current literature by also accounting for both parental involvement in education and certain child characteristics and behavior to further explain academic outcomes. The main objective behind this research is to gain an in-depth understanding of where the academic achievement of both first and second generation immigrant youths differ and what effect parental involvement and child characteristics in determining outcomes. The inclusion of parental involvement and child characteristics can have large policy implications for educational reform by potentially offering a new direction for policy initiatives to combat or mitigate current achievement gaps. This study goes beyond purely looking at backgrounds and household structures and examines how behavioral characteristics of both parents and children may work to address the severity of achievement gaps seen today.

A review of the literature

There are three main hypotheses that dominate research on the effects of immigration status on academic achievement: straight-line assimilation, accommodation without assimilation, and immigrant optimism. The straight-line assimilation framework predicts that over time racial and ethnic minorities will become part of mainstream culture and will blend into the US population (Park, 1914). In 1914, Robert E. Park wrote about the immigrant experience of assimilation stating, “The immigrant readily takes over the language, manners, the social ritual, and outward forms of his adopted country. In America it has become proverbial that a Pole, Lithuanian, or Norwegian cannot be distinguished, in the second generation, from an American born of native parents” and that it has “erased the external signs which formerly distinguished the members of one race from those of another” (Park, 1914). This hypothesis according to Park is broken down into various stages of assimilation, which include first contact between the groups, followed by a period of conflict between groups, thereafter accommodations are made for the minority group, and finally assimilation into the mainstream.

A second school of thought holds that accommodation can be made without assimilation and that as a result immigrant youth may have higher levels of academic achievement than native students (Gibson, 1988). Research on Punjabi immigrant families in Valleyside, California by Margaret Gibson revealed that first generation immigrants had high levels of achievement as a result of the “accommodation-without-assimilation” hypothesis. Gibson found that while the Punjabi students followed American customs at school, they were discouraged by parents from doing so in the home and from interacting with their native peers (Gibson, 1988). Still, other researchers have found that while underachievement persists amongst Hispanic students, in certain cases academic outcomes have improved.

A third hypothesis purposed by many researchers is one of “immigrant optimism” (Kao and Tienda, 1995). This hypothesis makes the claim that native born children with foreign born parents (second generation youth) are likely to academically outperform their native peers as a result of their parent’s quest for upward economic mobility in the US, while later generations of immigrants will more likely be disillusioned by the prospect of moving up the socio-economic ladder (Ogbu, 1991). Researchers such as Kao and Tienda have spent much time evaluating the relevance of these hypotheses on academic achievement and have found that there is little evidence to support the “straight-line assimilation” hypothesis while there is evidence to support both the “accommodation-without-assimilation” and “immigrant optimism” hypotheses (Kao and Tienda, 1995). By examining student achievement across generations of immigrant youth along with parental behavior according to generational status, Kao and Tienda find a prevalence of “immigrant optimism” in their study by showing there is a significant difference in parental involvement between foreign-born and native parents, with a heavier weight placed on allocation of time and space to homework with foreign-born parents (Kao and Tienda, 1995). Furthermore, Kao and Tienda find that first and second generation youth tend to outperform their third generation counterparts, thus supporting the “accommodation-without-assimilation” hypothesis (Kao and Tienda, 1995).

Research in the past ten years has also taken a more critical look at the psychological and sociological effects of adaptation and assimilation of immigrant children in the US. Min Zhou describes the environment for adaptation in the US becoming increasingly unfavorable due to recent trends in employment, with a growing gap between rich and poor (Zhou, 1997). Therefore, the opportunities for upward economic and social mobility for immigrants has become bleaker in recent years and the effect of this trend on immigrant children in the US can have some devastating effects both in school and out. Zhou points out that immigrant children in the US with poorly educated or unskilled parents often find themselves being raised in underprivileged neighborhoods with limited opportunities and poor schools, thus leading to disruptive social environments (and behavior) for children (Zhou, 1997).

While there are varying hypotheses to explain the academic outcomes of various immigrant populations, more focus on what drives this student achievement in first, second, and third generation immigrants using a macro-level approach are necessary to further understanding the dynamics of immigrant education. As immigrant populations become more prevalent in the American education system, it is imperative to continue to examine the changes in academic achievement.

ecls-k dataset Methodology

To conduct my research I use a longitudinal study that focuses on school assessments of students from kindergarten to eighth grade. The study used is The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K). The participants in the ECLS-K study are children from both public and private schools that attended both full-day and part-day kindergarten programs. The participants of the ECLS-K study are a nationally representative sample from diverse socioeconomic and racial/ethnic backgrounds. ECLS-K assessments were made beginning in the fall and spring of kindergarten (1998-99), the fall and spring of 1st grade (1999-2000), the spring of third grade (2002), the spring of fifth grade (2004), and the spring of eighth grade (2007). Apart from the children, the other participants in the study include the children's parents, teachers, and school administrators. The ECLS-K also provides information on school characteristics, childhood school experiences, student behavior and background, and facilities provided for students.

Reading and math assessments were taken from kindergarten through eighth grade and science assessments were taken third, fifth, and eighth grades. Several methods of scoring were used in order to assess and monitor cognitive and social development from kindergarten through eighth grade. For the purpose of this study I used the standardized assessment scores (also known as t-scores) in reading, math, and science which provide norm-referenced measurements of achievement. A high mean t-score for a particular subgroup indicates that the group’s performance is high in comparison to other groups. Furthermore, the t-scores provided by the ECLS-K data act as an indicator as to whether an individual or a subgroup ranks higher or lower than the national average.

Conceptual Framework

In general terms, the framework of this model follows previous research done on academic achievement of immigrant youth. The model includes controls for family background such as family structure as well as total household income, race/ethnicity, gender of the child of interest, and parental education levels. In addition, controls for school characteristics were also included such as type of school (public, private, or religious), size of school, location, and what facilities are provided such as libraries, media centers, and computer labs. The framework of this model consists of a cross-sectional OLS regression to measure how certain child characteristics, parental influences, and family resources contribute to academic outcomes through the primary years of education. While the ECLS-K dataset is a longitudinal survey, for the purpose of this study I have chosen to do a cross-section examination of the eighth grade level, which was surveyed in the spring of 2007.

***Dependent Variables***

Three dependent variables are used for measuring academic outcomes of eighth graders in the sample: reading, math, and science assessment t-scores. The eighth-grade direct cognitive assessment contained items in reading, mathematics, and science. The t-score was chosen as the dependent measure of academic achievement for this study for the reasons listed in the previous section: it provides an estimate of achievement relative to the national population and acts as an indicator on the extent to which a child or group may rank in comparison to the national average.

***Main Independent Variables of Interest***

Included in the model are person dummy variables to distinguish between native students and first and second generation immigrants. For the purpose of this study native students are the reference group and are defined as native born students whose mothers are native born. A first generation immigrant is considered a child who is foreign born whose mother is also foreign born and a second generation immigrant is defined as a child who is native born, but whose mother is foreign born. I focus on the birthplace of the mother rather than the father based upon previous approaches and on previous research which suggests that mothers play a more crucial role in managing their children’s educational careers than their fathers (Kao and Tienda 1995, Baker and Stevenson 1986). For this study, race has been broken down into five categories: White, Black, Asian, Hispanic, and other (this includes Pacific Islander, American Indian, Native Alaska, or more than one race non-Hispanic).

***Child Characteristic Variables***

The child characteristic variables used for this framework include variables related to school as well as outside of school. The in school characteristic variables consist of whether or not child enjoys school (this may be an indicator of how well the child is assimilating at school or into overall American school life), and participation in school activities such as school clubs and sports. Other variables of child characteristics include participation in outside school activities such as theater/drama classes and a variable involving feeling of self-worth which is whether or not the child feels proud. There is also a variable included on whether or not the child feels alone, which although not specified may be loneliness in school or outside of school.

***Parental Involvement Variables***

The variables used for this category include the frequency of parent teacher meetings within the school year, whether or not a parent helps the child with homework, if the parent has high academic expectations for their child (expects child to continue with school post high school graduation), and whether or not grades are important to parents. Another variable used for parental involvement includes whether or not a tutor was obtained to help the child in certain school subject. This variable was only available for reading and math and thus is not included in the estimation for science scores.

***Control Variables***

Included in the model are a number of control variables of which account for socio-economic status such as total household income and education of the mother and father in household (which ranges from graduating high school/equivalent to obtaining a Ph.D).

There are a few problems that we encounter when using this longitudinal survey that may bias the estimates on the coefficients in the model. The first issue consists of an oversampling of native students in the ECLS-K survey. However, I was able to account for this problem by utilizing proper weights, and thus results are presented using the un-weighted and weighted samples. The second issue is in regards to people in the survey deciding not to continue with the survey in following years, and people who are added to the survey in later years. This problem is one that cannot be easily remedied, and may in fact bias the estimates in the model.

Summary Statistics

Table 1.1 presents the means and standard errors of the variables of interest for the weighted sample. The average reading t-score is 49.61. For math t-scores, the weighted average is 50.21. For science t-scores, the average for the weighted scores is 50.29. In regards to race, roughly 6 percent are of Asian descent and almost 18 percent are Hispanic. Of the 6 percent Asian, roughly 0.4 percent of the sample is first generation Asian immigrants and 3 percent of the sample consists of second generation Asian immigrants. For Hispanic immigrants, just over 1 percent is first generation immigrants and almost 9 percent are second generation immigrants. Approximately 15 percent of the sample is African American students and just about 5 percent are included in the race category “other”. Using the weighted sample almost 3 percent of the sample is of Asian descent, with 0.15 percent being first generation and 1.8 percent being of second generation. Approximately 18.5 percent of the weighted sample is of Hispanic descent, 1.2 percent of which are first generation and 8.6 percent of which are second generation. Using the weighted sample, 17.2 percent are African American and 4.3 percent are of the race “other”.

Results

Results for the academic performance of Asian and Hispanic immigrants are presented using full sample child and parent weights along with cross-sectional weights exclusively used for eighth grade students. Each table of results represents either reading t-scores, math t-scores, or science t-scores. Linearized standard errors are already provided when using the weighted sample and differences in results were negligible in all but one model, making heteroskedasticity of minimal concern.

**Reading T-Scores**

When using the weighted sample of eighth grade students as shown on Table 3.1, the most notable variation is in the performance of first generation Asian immigrants, when accounting for all the controls the estimated reading score is 3.999 point higher than white natives, with statistical significance, while second generation immigrants are only 0.941 points higher, however lacking statistical significance in this case. The estimated reading score for second generation Hispanic immigrants is 2.022 lower than white natives, although only the second generation Hispanic estimate proves to be highly statistically significant.

**Math T-Scores**

Table 3.2 illustrates the estimated results using the weighted sample and according to the coefficient estimate a first generation Asian immigrant’s math score is predicted to be 8.399 points higher than that of a white native and only 1.583 for a second generation, although the second generation estimate is not statistically significant. For Hispanic immigrants the first generation coefficient statistically significant and the second generation highly statistically significant at -3.493 points and -1.972 points for second generation Hispanics.

**Science T-Scores**

Both first and second generation Asian immigrants appear to be scoring very similarly to white natives in science, with neither coefficients proving to be statistically significant. The science scores for Hispanic immigrants move in a far different direction than that of Asian immigrants. For second generation Hispanics the point difference is highly statistically significant with a 3.445 point reduction in comparison to white native students. These results are striking not only because of the large magnitude of the effect of being a Hispanic immigrant, but also because the effect almost doubles from first generation to second generation. Furthermore, this effect is compounded if that student comes from a low income household, reducing their score by an additional 1.705, or if that student is a second generation Hispanic child and female their score may be reduced by over 7 points.

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| **Table 3.1: Dependent Variable: Weighted Reading T-Score** | | | | | | | |
| 1st Generation Asian Immigrant Child | 7.171\*\* (3.611) | 6.626\* (3.466) | 5.808\* (3.303) | 6.988\* (3.763) | 4.867 (3.247) | 4.839\* (2.886) | 3.999\* (2.171) |
| 2nd Generation Asian Immigrant Child | 2.832\*\*\* (0.862) | 2.506\*\* (0.882) | 1.836\*\* (0.812) | 2.188\*\* (0.885) | 1.696\* (0.966) | 1.599 (1.019) | 0.941 (.1.120) |
| 1st Generation Hispanic Immigrant Child | 0.019 (2.229) | -0.065 (2.226) | -1.269 (2.155) | -1.210 (2.494) | -3.028 (2.801) | -3.258 (2.716) | -1.883 (2.593) |
| 2nd Generation Hispanic Immigrant Child | 0.342 (1.072) | 0.261 (1.051) | -0.872 (0.878) | -0.385 (0.931) | -1.420 (0.935) | -1.715\* (0.940) | -2.022\*\* (0.839) |
| Female |  | 2.346\*\*\* (0.534) | 2.388\*\*\* (0.487) | 2.327\*\*\* (0.489) | 2.504\*\*\* (0.535) | 1.911\*\*\* (0.526) | 1.101\*\* (0.504) |
| Black |  |  | -6.937\*\*\* (1.832) | -7.175\*\*\* (2.089) | -7.846\*\*\* (2.245) | -6.852\*\*\* (1.539) | -6.079\*\*\* (1.903) |
| Race Other |  |  | -1.167 (1.211) | -0.764 (1.230) | -0.978 (1.228) | -0.964 (1.196) | -1.613 (1.173) |
| Family Income <$25,000/yr | |  |  | -3.253\*\*\* (0.912) | -2.547\*\* (1.135) | -2.666\*\* (1.050) | -1.548 (1.007) |
| Public School |  |  |  | -1.022 (0.673) | -1.060 (0.713) | -0.956 (0.709) | -1.071 (0.656) |
| Parent met teacher |  |  |  |  | -0.087 (1.231) | 0.157 (1.215) | -0.199 (1.122) |
| Grades important to parent | |  |  |  | -1.141\* (0.670) | -1.269\* (0.702) | -1.384\*\* (0.581) |
| high expectations |  |  |  |  | 3.774\*\*\* (0.480) | 3.415\*\*\* (0.484) | 2.853\*\*\* (0.465) |
| Parent helps with HW |  |  |  |  | 2.077\*\*\* (0.714) | 1.941\*\*\* (0.658) | 1.172\* (0.676) |
| Child in school sports |  |  |  |  |  | -0.242 (0.500) | 0.014 (0.476) |
| Child in drama club |  |  |  |  |  | 1.816\*\*\* (0.493) | 1.819\*\*\* (0.438) |
| Child in school clubs |  |  |  |  |  | 0.979\* (0.539) | 0.523 (0.521) |
| Child enjoys school |  |  |  |  |  |  | -0.173 (1.241) |
| Child likes reading |  |  |  |  |  |  | 4.967\*\*\* (0.735) |
| Reading tutor |  |  |  |  |  |  | -8.693\*\*\* (1.042) |
| Child not proud |  |  |  |  |  |  | -1.728\*\* (0.795) |
| Child lonely |  |  |  |  |  |  | -1.695\*\* (0.806) |
| R2 | 0.1928 | 0.203 | 0.2305 | 0.229 | 0.2581 | 0.2512 | 0.3407 |

\*p< .10 \*\*p<.05 \*\*\*p<.01

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| **Table 3.2: Dependent Variable: Weighted Math T-Score** | | | | | | | |
| 1st Generation Asian Immigrant Child | 7.304\* (4.396) | 7.495\* (4.473) | 6.74 (4.333) | 7.581 (4.694) | 5.965 (4.080) | 6.162 (3.955) | 8.399\*\* (4.302) |
| 2nd Generation Asian Immigrant Child | 2.654\*\* (1.346) | 2.769\*\* (1.315) | 2.155  (1.341) | 2.026 (1.505) | 1.161 (1.544) | 1.110 (1.545) | 1.583 (1.428) |
| 1st Generation Hispanic Immigrant Child | -0.623 (1.588) | -0.594 (1.588) | -1.690 (1.551) | -2.505 (1.655) | -3.562\*\* (1.726) | -3.653\*\* (1.670) | -3.493\*\* (1.759) |
| 2nd Generation Hispanic Immigrant Child | -0.605 (0.724) | -0.577 (0.726) | -1.611\*\* (0.681) | -1.417\* (0.747) | -2.245\*\*\* (0.767) | -2.213\*\*\* (0.786) | -1.972\*\*\* (0.693) |
| Female |  | -0.820\* (0.428) | -0.783\* (0.395) | -0.810\*\* (0.403) | -0.962\*\* (0.410) | -1.382\*\*\* (0.423) | -1.595\*\*\* (0.378) |
| Black |  |  | -6.194\*\*\* (0.910) | -5.868\*\*\* (1.087) | -6.087\*\*\* (1.093) | -5.988\*\*\* (1.061) | -4.733\*\*\* (1.153) |
| Race Other |  |  | -1.400 (1.319) | -0.780 (1.326) | -0.937 (1.304) | -0.947 (1.233) | 0.048 (1.153) |
| Family Income <$25,000/yr |  |  |  | -2.765\*\*\* (0.872) | -2.130\*\* (0.843) | -2.176\*\* (0.847) | -1.360 (0.905) |
| Public School |  |  |  | -0.621 (0.529) | -0.500 (0.564) | -0.430 (0.576) | -0.713 (0.514) |
| Grades important to parents |  |  |  |  | -0.860 (0.596) | -1.049\* (0.609) | -0.920 (0.586) |
| high expectations |  |  |  |  | 3.502\*\*\* (0.500) | 3.370\*\*\* (0.525) | 3.193\*\*\* (0.505) |
| Parent helps with HW |  |  |  |  | 0.844\* (0.451) | 0.831\* (0.441) | 0.296 (0.417) |
| Child in school sports |  |  |  |  |  | 0.318 (0.413) | 0.319 (0.410) |
| Child drama club |  |  |  |  |  | 1.488\*\*\* (0.449) | 1.624\*\*\* (0.443) |
| Child in school clubs |  |  |  |  |  | 0.960\*\* (0.491) | 0.958\*\* (0.456) |
| Child enjoys school |  |  |  |  |  |  | 2.123\*\*\* (0.668) |
| Child has math tutor |  |  |  |  |  |  | -5.491\*\*\* (0.495) |
| Child not proud |  |  |  |  |  |  | -2.070\*\*\* (0.759) |
| Child lonely |  |  |  |  |  |  | -2.258\*\*\* (0.802) |
| R2 | 0.1832 | 0.1849 | 0.2136 | 0.2054 | 0.2278 | 0.2295 | 0.2985 |

\*p< .10 \*\*p<.05 \*\*\*p<.01

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| **Table 3.3: Dependent Variable: Weighted Science T-Score** | | | | | | | |
| 1st Generation Asian Immigrant Child | 2.914 (2.659) | 3.359 (2.808) | 2.349 (2.645) | 3.033 (3.016) | 1.830 (2.491) | 1.810 (2.298) | 2.276 (2.109) |
| 2nd Generation Asian Immigrant Child | 1.626\* (0.882) | 1.893\*\* (0.819) | 1.060 (0.834) | 1.296 (0.965) | 0.839 (1.052) | 0.641 (1.053) | 0.465 (1.052) |
| 1st Generation Hispanic Immigrant Child | 0.995 (1.531) | 1.064 (1.513) | -0.390 (1.507) | -0.638 (1.671) | -1.465 (1.936) | -1.645 (1.920) | -0.911 (2.051) |
| 2nd Generation Hispanic Immigrant Child | -1.385\*\* (0.662) | -1.320\* (0.676) | -2.697\*\*\* (0.668) | -2.499\*\*\* (0.702) | -3.344\*\*\* (0.788) | -3.484\*\*\* (0.772) | -3.445\*\*\* (.732) |
| Female |  | -1.918\*\*\* (0.442) | -1.874\*\*\* (0.399) | -2.003\*\*\* (0.390) | -1.923\*\*\* (0.418) | -2.424\*\*\* (0.427) | -2.515\*\*\* (0.419) |
| Black |  |  | -7.684\*\*\* (0.954) | -7.582\*\*\* (0.742) | -7.676\*\*\* (0.782) | -7.652\*\*\* (0.843) | -7.378\*\*\* (0.821) |
| Race Other |  |  | -3.364\*\*\* (1.010) | -3.159\*\*\* (0.992) | -3.275\*\*\* (1.036) | -3.265\*\*\* (0.954) | -3.332\*\*\* (0.893) |
| Low Income |  |  |  | -2.516\*\*\* (0.778) | -1.913\*\* (0.787) | -1.901\*\* (0.766) | -1.705\*\* (0.752) |
| Public School |  |  |  | -0.139 (0.499) | -0.042 (0.535) | 0.157 (0.529) | 0.142 (0.525) |
| Parent met teacher |  |  |  |  | 1.037 (1.138) | 1.181 (1.166) | 1.233 (1.110) |
| Grades important to parents |  |  |  |  | -0.987\*\* (0.497) | -1.001\* (0.521) | -1.134\*\* (0.507) |
| high expectations |  |  |  |  | 2.210\*\*\* (0.496) | 1.954\*\*\* (0.508) | 1.827\*\*\* (0.504) |
| Parent help with Homework |  |  |  |  | 1.388\*\*\* (0.438) | 1.307\*\*\* (0.435) | 1.030\*\* (0.430) |
| Child in school sports |  |  |  |  |  | -0.663\* (0.388) | -0.707\* (0.385) |
| Child in drama club |  |  |  |  |  | 1.595\*\*\* (0.400) | 1.694\*\*\* (0.402) |
| Child in school clubs |  |  |  |  |  | 1.384\*\*\* (0.440) | 1.221\*\*\* (0.432) |
| Child enjoys school |  |  |  |  |  |  | 2.086\*\*\* (0.637) |
| Child not proud |  |  |  |  |  |  | -2.220\*\* (0.909) |
| Child lonely |  |  |  |  |  |  | -1.039 (0.821) |
| R2 | 0.1941 | 0.2072 | 0.2402 | 0.2292 | 0.2433 | 0.2842 | 0.2908 |

\*p< .10 \*\*p<.05 \*\*\*p<.01

**Control Variables**

Following the findings of previous research, the control variables such as household income and parents’ education levels both proved to be highly statistically significant in all cases for math, reading, and science. Additionally, the magnitude of the effect of parental education levels is quite large. A student whose parents graduated from college or received a degree equivalent is likely to have a reading score over 8 points higher than a student whose parents did not finish high school and about 5 points higher than a student whose parents have high school diplomas. The effect of being African American proved to be both largely negative and highly significant in all cases. For un-weighted reading scores an African American student is estimated to score 6.079 points lower than a white native student. For math t-scores African American students are estimated to score -4.733 points using the weighted sample. Science t-scores appear to have the largest negative effect for African American students estimating them to score -7.378 in the weighted sample than white students. It is evident from the coefficient estimates stated above that native African American students are scoring even lower than immigrant Hispanic students across the aboard in all three subjects.

The female variable in the model is also quite telling in regards to the academic performance of immigrant students. The coefficient estimate on females for reading is 1.101 points higher than white males. For math and science the coefficient estimates remain highly statistically significant and negative, although the magnitude of the effect is larger in science at -2.515 points as opposed to -1.595 points in math. Therefore, a second generation female Hispanic student in science is estimated to score 5.96 points lower than a white native male on in science. Although not as large, the magnitude of the effect in math is still rather large for females at -3.567 points lower than Hispanic males.

**Parental Involvement and Child Behavior/Feelings Variables**

In all cases, a parent having high expectations for their child can mitigate the negative effect of being a first or second generation Hispanic immigrant. In addition, if parents claimed that grades were very important to them then scores in reading and science were significantly affected by a reduction of between 0.5 and 1 point. While the magnitude of this effect remains small, the negative sign in front of the coefficients is worth noting for the implications that can be drawn from these results. Parental help with the child’s homework has a significant although somewhat small positive effect on a child’s science score with a 1.030 point increase and on reading scores a 1.172 positive point effect. Therefore, eighth grade students most likely see beneficial results from parental aid in completing science related homework assignments.

Overall, participating in school activities such as school clubs or drama appear to have a positive significant effect on school performance in all three categories, but the magnitude of the effect ranges from small to medium between 0.689 to 1.948 points, with the strongest effects of school activity reflected in reading and science scores. For estimated reading scores, if the child likes to read their score is estimated to be 4.383 points higher using the un-weighted sample and 4.967 points higher using the weighted sample, over a child who does not enjoy reading. Thus, the negative effect of being a first or second generation Hispanic immigrant or being from a low income household can be reversed if that student is encouraged to read or likes reading to begin with. This negative effect can be further reversed if that child also enjoys attending school. Some of the strongest estimated effects with the child behavior/feelings variables were on if the child claimed to enjoy school and if the child did not feel proud or felt lonely. With reading scores it made a 1.655 point statistically significant difference if the child claimed to enjoy school, a 2.371 point increase in math scores and a 2.835 point increase in science scores using the un-weighted sample; a 2.123 point increase in weighted math scores, and a 2.086 point increase in weighted science scores, all highly statistically significant.

Discussion & Conclusions

With the use of ECLS-K longitudinal dataset, this paper has looked at comparative academic achievement levels of Asian and Hispanic first and second generation immigrant students in the United States. In addition, this paper examined how such factors as parental involvement and child behavioral characteristics can affect levels of achievement for both natives and immigrant students. From the results stated above it is clear that there is a significant gap between achievement levels between Asian and Hispanic immigrants. In all three measures of achievement (reading, math, and science), Hispanic immigrants in both generations are estimated to perform below white native students and Asian immigrants of both generations are estimated to perform higher than native students. The results of this study provide a strong case for determining that Hispanic immigrant students in the United States are being left behind academically, and that little to no improvement is seen from one generation to the next. While most of the parental involvement variables appeared to have a rather small impact on academic outcomes, high academic expectations had the strongest effect. The indicators for child characteristics showed mixed results in relation to academic outcomes, however involvement in drama or some sort of school club appeared to have a small positive impact on achievement nonetheless. This may serve as some indication to push immigrant students to participate in extracurricular activities especially clubs such as drama which heavily incorporate reading/memorization and interaction with peers.

The science outcomes of Hispanic immigrants and African Americans, and even the lack of high scores from Asian immigrants are alarming and reveal a greater problem in educational curricula that is in need of policy remedy. According to the results of the 2009 National Assessment of Educational Progress, known as the Nation’s Report Card, only 30 percent of eighth graders performed at or above a level of proficiency in science, with this score only becoming worse by twelfth grade with only 21 percent at a level of proficiency (NAEP, 2011). An alarming majority 63 percent of the nation’s eighth graders performed at or above a basic level with only 2 percent performing at an advanced level (NAEP, 2011). The results are even worse for racial/ethnic minority students with 58 percent of Hispanic students scoring below the basic level of knowledge and 71 percent of African American students scoring below basic (NAEP, 2011). In addition, eighth grade students who qualified to receive free school lunch (due to low income qualifying) on average scored 30 points lower than those who were not eligible (NAEP, 2011). The underlying issue with such low national scores in science is that very few students are obtaining the advanced skills necessary for a possible career in science and technology, and apart from Asian students, racial and ethnic minorities have an even smaller chance of entering careers in the science field. The US Education Secretary Arne Duncan has recently expressed his concern that the current rate of learning in science is not one that will support the US’s role as an international leader in the sciences (Armario, 2011). According to the former director of the New York Hall of Science Alan Friedman, “our ability to create the next generation of US leaders in science and technology is seriously in danger.” (Armario, 2011) With immigrant populations continuing to account for a large portion of population growth in the US, it is imperative that US education policy address the science achievement gaps in order to ensure that the US remain among one of the international leaders in the sciences.

The only area in which Hispanic immigrants show significant improvement are in math scores, reducing the achievement gap by roughly 50 percent by the second generation. The indications of the gaps are profound and offer some insight with regard to the quality of English as a Second Language (ESL) programs, or other variations of bilingual programs for language-minority students which operate in many schools across the United States, whose purpose it is to integrate students into the American school system mainly through the mastery of the English language. As the Ramirez study shows, with the large variety of bilingual programs offered across schools and the differing forms of implementation, academic results for such programs are varied. Because of the number of Hispanic immigrants entering the country at an increasing rate, a case can be made for investing more funding into minority language programs in the US.

The long term consequences of ignoring the achievement gaps that exist between white native students and Hispanic immigrants may have long term effects on the integration of US society and overall US economic growth. As has been argued by Min Zhou, employment opportunities in recent years for immigrants are paying less and allowing for less upward socio-economic mobility (Zhou, 1997). Therefore, there are fewer employment opportunities for new immigrants entering the country which may in turn impact the opportunities for the children of immigrants. The effects that of coming from a low income home on academic outcomes may be quite large. An immigrant family with limited access to educational resources due to economic limitations, such as lack of access to a computer or books, coupled with the struggles of possible intergenerational conflicts may have a severe negative impact on the achievement levels of immigrant children. This in turn may limit children’s opportunities for upward economic/social mobility, thus creating a cycle of low wage earnings and achievement. Some economists such as David Autor, Lawrence F. Katz, and Melissa S. Kearney have gone as far as to say that the US labor market has become polarized into high wage and low wage jobs with a shrinking middle wage (Autor, Katz, and Kearney, 2006). Autor, Katz, and Kearney also note that increased “computer capital” has become a substitute for human labor in regards to certain cognitive and manual tasks, thus driving down the cost of routine tasks performed by both human labor and computer labor (Autor, Katz, and Kearney, 2006). According to Autor, Katz, and Kearney, because computer capital drives down the price of performing routine tasks, wages get driven down as well causing a polarization of lower wage jobs (Autor, Katz, Kearney, 2006). Other economists attribute the shrinking of middle class wages to outsourcing both blue and white collar jobs out of the US. In the last two decades the US has seen a growing share of imports in inputs used in US manufacturing and especially in high-tech manufacturing such as electronics and computers (Bardhan and Kroll, 2003). If the US labor market is indeed becoming polarized toward the upper and lower tails in wages then parents of families migrating to the US are afforded fewer opportunities to improve their economic situations unless they already have the skills needed for upper-tailed jobs. This has serious economic implications for limiting not only growth of the middle class but overall economic growth in the US. Improving the academic performance of immigrant children in the US through improved educational policies is essential to ensuring that all immigrants have the opportunity to pursue their idea of the “American dream”.

While this study breaks down achievement levels of immigrants by group and generation, future research should focus on third generation immigrants as well to see if the trends in outcomes continue in the same direction or if changes are seen by the third generation. Furthermore, more research is needed on the academic outcomes of children from low income homes, especially those of immigrant families. More research in this field is needed to fully understand the variation in scores between white natives and immigrant children of different race/ethnic groups and thus address the apparent achievement gaps that exist.

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