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Schooling Location and Economic, Occupational and Cognitive Success among Immigrants and Their Children: The Case of Los Angeles*

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Abstract

Large numbers of foreign-born residents in the United States mean that many people receive at least part of their education abroad. Despite this fact, our understanding of nativity differences in the success of adults and their children is based on research that does not empirically consider variation in the benefits to schooling depending on where it is received. We use data from the Los Angeles Family and Neighborhood Survey (L.A. FANS) to examine: a) whether the socioeconomic and cognitive returns to education depend on whether it is received in the U.S. or abroad; and b) whether schooling location partially accounts for nativity differences in these returns. We find that the returns to schooling are generally largest for adults who receive at least some of their highest level of education in the U.S. The beneficial effects of U.S. schooling are more pronounced at higher levels of educational attainment. Schooling location accounts for a sizeable fraction of the lower socioeconomic and cognitive returns of the foreign-born, relative to natives; some meaningful differences remain, however. In addition, the higher cognitive skills of the children of foreign-born adults remain unexplained. Although we cannot distinguish among the possible pathways underlying these associations (e.g., school quality, transferability of credentials, the timing of immigration) our findings suggest the importance of considering factors related to schooling location as predictors of socioeconomic and cognitive success in the United States.

INTRODUCTION

We use data on schooling location, socioeconomic attainment and cognitive skills to consider the extent to which the returns to schooling depend on its location. Large numbers of foreign-born residents in the United States mean that many people receive at least part of their education abroad. As a result, our understanding of the influence of educational attainment on the social and economic well being of this group, as well as any consequences for the next generation, is potentially complicated by factors related to schooling location.

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The social, economic and cognitive benefits of educational attainment may depend on the environment in which education is received. Using data from the Los Angeles Family and Neighborhood Survey (L.A. FANS), we consider this issue for a diverse and representative sample of adults and children. Specifically, we ask three questions. First, do the economic, occupational and cognitive returns to adults' education differ depending on where schooling is attained? Secondly, do differences in schooling location play a role in explaining nativity differences in these returns? Third, do the cognitive returns to adults' schooling location extend to the next generation?

BACKGROUND

The Social, Economic and Cognitive Returns to Schooling

Education is an important marker of social status and a crucial component in processes of social mobility and reproduction (Blau and Duncan 1967; Bielby et al. 1977; Featherman and Hauser 1978). Although social background remains an important determinant of status attainment, education is a dominant mechanism for social mobility and a well-known predictor of occupational and financial success, in early adulthood and subsequently. Less tangible benefits also accrue from education in the form of prestige, social networks, knowledge and information. High levels of education afford access to social and cultural resources, or “capital” (Coleman 1988; DiMaggio and Mohr 1985). These resources include peer networks that provide access to desirable labor market positions, marital partners with high levels of education or financial capital, high quality information, and cultural events (DiMaggio and Mohr 1985; Lin 1999; Peterson et al. 2000). The benefits of education also extend to future generations: children from homes and/or schools with high levels of social and cultural capital have more resources to draw from and are more likely to attain high levels of education themselves (DiMaggio 1982; Parcel and Dufur 2000).

Cognitive skills are also related to educational attainment; higher levels of education empower people with fundamental knowledge, reasoning and problem-solving skills. Finally, it is worth pointing out that education is also more strongly related to physical and mental health than are other markers of social status (e.g., Smith 2005). Strong educational gradients in health exist in most groups in industrialized nations, with those at successively higher levels experiencing better health than those below them (Case et al. 2002; Marmot 2001). Not only are social, economic, cultural and health-related factors affected by educational attainment, but they also affect the educational attainment of future generations (e.g., Case et al. 2005; Jackson forthcoming). Cumulatively, they therefore play an important direct and indirect role in social mobility processes.

Nativity Differences in the Returns to Education

Although the benefits of education are plentiful, their distribution across subgroups of the population is unequal. Our focus is on differences in benefits due to schooling location and nativity. The 2000 U.S. Census indicates that about 11% of the population is foreign-born. Migration to the U.S. often brings short and long-term improvements in quality of life, particularly among those of low social position in their native countries (Chiswick 1978; Jasso et al. 2004; Massey 1981; Schoeni 1997). Classic assimilation theory predicts a smooth and linear process of integration across many dimensions, including language and cultural practices, social networks, residential context and social status (Gordon 1964). Evidence shows, however, that the process of assimilation is not uniform across all foreign-born groups, but depends on levels of education, the reasons for migration, the context of reception, and skin color (Alba and Nee 2003; Waters 1999).

Research examining immigrant integration has focused primarily on earnings among Mexicans, the largest immigrant group in the United States. Foreign-born Mexican men and

women earn less than U.S.-born Mexican-Americans and non-Hispanic whites (Allensworth 1997; Verdugo and Verdugo 1985). Part of this differential is explained by differences related to the immigration process, such as English language skill and social networks within the labor market (Borjas 1983; Morales and Ong 1993). Like Mexicans, Central and South Americans also gain less financially from education than their native-born peers (Tienda 1983). These patterns changed little during the period between 1970 and 1990 (Snipp and Hirschmann 2005). Asian immigrants are clustered at both the top and bottom of the socioeconomic hierarchy, depending on ethnicity and national origin (Zeng and Xie 2004). On average, however, Asians are more successful than Hispanics in converting education into economic and occupational success (Iceland 1999; Niedert and Farley 1985).

The Importance of Schooling Location

Most literature on nativity differences in adults' and children's success fails to consider explicitly whether educational attainment confers equal benefits, regardless of where it is received. We extend previous work by describing nativity differences in the *association* between education and adults' economic and occupational success, and adults' and children's cognitive achievement. Our data do not allow us to test hypotheses about the reasons for differential returns to education by schooling location. We aim instead to add to existing work by documenting differentials in the returns to education among adults and their children by place of education. We also examine the role of schooling location in accounting for observed nativity differences in the returns to education. To motivate our analysis, we consider the potential importance of schooling location below.

School Quality—Educational systems vary significantly across nations in instructional quality, content, and access to financial and technological resources. Whereas graduation from a U.S. secondary school generally implies a basic level of math, verbal and analytical reasoning skill, the same may not be true in immigrants' countries of origin. For immigrants from poor countries, non-U.S. education is also less likely to be accompanied by resources conducive to learning. UNESCO data from 2000, for example, indicate that the average primary school pupil-to-teacher ratio was 15 in the U.S., 27 in Mexico and 33 in Guatemala. These resource deficiencies may result in lower cognitive skill, occupational placement and earnings. They may also have an effect on the cognitive achievement of the next generation, if more poorly-educated parents are unable to provide the same high-quality resources and transfers of information to their children.

Although many immigrants to the U.S. receive at least some of their education in resource-poor settings, some are educated in countries that offer equal or better resources and instructional content than the U.S. For example, in OECD's 2006 Programme for International Student Assessment (PISA) of science competency, Mexico had a mean score substantially below that of the United States, but Japan, Taiwan, Hong Kong, Korea and several European countries scored well above the U.S. (OECD 2007). These country-specific differences suggest that the returns to U.S. vs. non-U.S. schooling will vary by country of origin. In work on school quality differences, Brastberg and Ragan (2002a) use 1980 and 1990 Census data to show that school quality is related to earnings in the U.S. among foreign-born men from several countries. They find that immigrants from countries with higher school quality—European and East Asian countries—have higher earnings than their peers from countries with poorer schools, net of educational attainment and important confounders. In other work, Bratsberg and Ragan (2002b) find that even immigrants who receive only part of their schooling in the U.S. earn more than their entirely foreign-educated peers. Of course, variation in school quality also exists within nations, including the U.S. (e.g., Card and Krueger 1992a, 1992b). Nonetheless, requirements for standardized

testing and teacher training within the U.S. make it more likely that a basic set of skills is acquired by the majority of students completing a given level of education.

Credential Transferability—The difficulty of transferring credentials internationally may also make it harder for those educated abroad to obtain a job that suits their qualifications. Immigrant doctors and lawyers, for example, are often unable to work in their professions because of country-specific licensing requirements and the need to learn a new vocabulary (e.g., Friedberg 2000). If institutional prestige matters in the job market, those with foreign diplomas may also not be rewarded as highly for the same level of training (Jaeger and Page 1996). Zeng and Xie (2004) find that the earnings disadvantage of foreign-born Asians is due, in part, to a mismatch of their credentials with available jobs. The reasons for this may include the logistics of transferring credentials or employers' preferences for a U.S. education.

U.S. Adjustment and Experiences in the Sending Country—Finally, a U.S. education implies familiarity with U.S. norms and integration into social and professional networks instrumental for socioeconomic success. Foreign-born adults who receive U.S. schooling necessarily spend more time in the U.S., and are therefore likely to be proficient in English, have more U.S. work experience, and be integrated themselves into peer networks through work, school or neighborhoods. Conversely, an older age at immigration implies both less experience in the U.S. and greater exposure to the sending country's norms, social organization, labor market and cultural practices. Time spent in the U.S. and age of immigration may therefore explain the observed relationships among schooling location and economic, occupational and cognitive success. These factors also pose methodological problems, however, and distinguishing the influence of these experiences from that of schooling location is often impossible. For example, Zeng and Xie (2004: 1104) cite the hypothetical experiment of two foreign-born adults who are equally educated, one abroad and one in the U.S. These two adults can have identical U.S. labor market experience only if they begin working in the U.S. simultaneously—but, realistically, the U.S.-educated adult is likely to have had more U.S. work experience and will have had more exposure to the U.S. in general (e.g., English-speaking environment, norms, social networks). Thus, schooling location is likely to be correlated with U.S. work experience and with time spent in the U.S. Because our data do not allow us to distinguish between schooling location and the timing of immigration, we do not claim to solve this problem, and our findings are subject to the same limitations as those encountered in earlier studies (Brastsberg and Ragan 2002a; Zeng and Xie 2004). Nonetheless, we extend existing research by using measures of schooling location to describe not only economic success, but also occupational success and cognitive skills among both adults and children. One benefit of studying cognitive skill is that it may be more weakly affected by U.S. experience and networks than income and occupational status.

This Study

As described above, most previous research implicitly assumes that all schooling is equivalent in content and quality, and that all credentials provide equivalent signals to employers, regardless of where they are received. Studies that explicitly examine differences in educational returns by schooling location are also limited because they examine the effects only on earnings and income disparities. Although income is a vital marker of socioeconomic success, it is only one indicator of advantage. Using data from the Los Angeles Family and Neighborhood Survey, we extend existing work by considering the role of schooling location in explaining nativity differences in attainment. We also move beyond a solely economic indicator of U.S. integration, by considering occupational status and cognitive skill in addition to income. Cognitive skill, in particular, may be a purer reflection

of experiences during the schooling process than of experiences in the U.S. Finally, we examine whether any relationship between schooling location and cognitive skill extends to the next generation, by studying cognitive skills among the children of our sample of adults.

DATA

Data come from the 2000-2001 L.A. FANS, a study of families and neighborhoods in Los Angeles. The fieldwork was conducted in 2000-2001 and includes a representative sample of 3,090 households in 65 neighborhoods. The survey is based on a stratified probability sample, with oversamples of poor neighborhoods and households with children (Sastry et al. 2006). Respondents include randomly selected adults (RSAs), primary caregivers (PCGs), randomly selected children (RSCs) and siblings of the RSCs (SIBs). The response rate was 85% among RSAs, 89% among PCGs, 87% among RSCs and 86% among all children. These response rates compare favorably to those of major nationally representative surveys (Peterson et al. 2003).

METHODS

Measures

Dependent Variables—Dependent variables include *total family income* and *occupational status* among adults, and *reading skills* among adults and children. Total family income is the combined family earnings, earnings from assets and transfer income.[1] We model the natural log of income. The measure of family income includes imputed values for missing responses, based on relevant predictor variables (Bitler and Peterson 2004). Occupational status is measured using the International Socioeconomic Index of Occupational Status (ISEI), created by Ganzeboom et al. (1992).

We also examine reading skills for adults and children. Among adults, reading skill is assessed with standardized scores on the Woodcock-Johnson Revised (WJ-R) passage comprehension test. Standardized scores are transformed versions of raw scores, with a mean of 100 and a standard deviation of 15 (Peterson et al. 2003). Children's reading skill is measured with broad reading scores (standardized scores) from the WJ-R assessment. Broad reading scores combine scores on the letter-word identification and passage comprehension assessments to give an overall indication of reading skills. Adults and children could choose to take the exam in either Spanish or English.[2]

Analyses of income and occupational attainment are limited to adults (RSAs) and PCGs, yielding a representative sample of adults in L.A. County when sampling weights are applied. However, only PCGs completed the cognitive assessment and are included in that portion of the analysis. Analyses of children's reading skill include both RSCs and their siblings, who constitute a representative sample of children when sampling weights are applied. The adult sample size ranges from 1,767 to 2,998 respondents ages 18 and older, depending on the outcome. The sample of children includes 1,522 respondents—ages 6 to 17 years old.[3]

[1]We also examined logged individual wages (results not shown) as a sensitivity test and found the same pattern of results. Because some respondents were not working at the time of the survey, there is more missing data on this measure. Findings are not presented because of very small sample sizes within cells.

[2]In analyses not presented here, we also examined children's math achievement. We do not present these findings because they parallel the results shown for reading skill.

[3]Children ages 3 to 5 completed only one of the two tests (the letter-word identification assessment) and are therefore excluded from the analysis.

Schooling—We consider two variables, educational attainment and schooling location, and the interaction between them. Respondents reported educational attainment, the year in which they reached that level, and current enrollment status. Foreign-born respondents also reported the year that they arrived in the U.S. and whether they received any education abroad. Educational attainment is measured by the highest level of completed schooling: primary schooling or less, some secondary, completion of secondary, some college, and college completion or beyond. Schooling location can be measured in several ways, from a simple measure indicating whether any education was obtained in the U.S. to a more complex measure classifying individuals by education obtained within the U.S. at each level of schooling. Sample sizes in the L.A.FANS are not sufficiently large to consider the latter type of measure; in addition, obtaining this level of detail from respondents' reports would require several assumptions.

The effects of schooling location on socioeconomic and cognitive success are likely to vary by levels of educational attainment. For example, difficulties in transferring foreign credentials to the U.S. apply only to those who have post-secondary credentials. Our measure of schooling location examines whether the highest completed level of schooling occurs within or outside of the U.S. We test two variants of this measure. The first distinguishes between respondents with no U.S. schooling and those with some or all U.S. schooling at their highest attained level.[4] The second measure distinguishes among none, some and all U.S. schooling at the highest attained level. For each outcome variable, we use likelihood ratio tests to compare two nested models, one with the dichotomous location measure, and one with the three-category measure; we proceed with the three-category measure when it is statistically preferable to the binary measure. We then interact the location variable with the five levels of educational attainment.

The schooling location category is readily defined for those who complete all education in one place. Assignment for those who arrive in the U.S. before the completion of their education can be determined using information on the years of education at each level, the year of U.S. arrival and the year of completion of the highest level of schooling.[5] For these respondents, if the difference between the year of school completion and the year of U.S. arrival is less than the number of years they have completed in the highest level, they are assigned to the “some U.S” category. If the difference is greater than or equal to the numbers of years at their highest level, they are assigned to the “all U.S” category. The “some” and “all” categories are combined for the dichotomous schooling location variable.

Other Independent Variables—Nativity status distinguishes those born in the U.S. (reference), Latin America (including Mexico and Central America), Asia (including South Asia, East Asia and the Pacific), and other countries (including Europe, Central Asia, and the Middle East).[6] We also include factors that are correlated with education and socioeconomic success. Because race/ethnicity may influence the extent to which people are placed into particular tasks within an occupation, as well as the opportunities they have for advancement, we include a measure indicating non-Hispanic white or other ethnicity (reference), Latino, non-Hispanic black or Asian/Pacific Islander.[7] All analyses include respondents' sex (female=reference), age (in years), marital status (unmarried=reference), documentation status, the number of children in the household (a linear measure), the occupational status of the household head when the respondent was 14 years old, the current

[4]Because of limited information on immigrants' educational history in L.A.FANS, respondents who receive any U.S. education are defined as receiving at least some U.S. education at their highest attained level.
[5]Because time in the U.S. is used in constructing the schooling location variable, we do not control for it in the analyses.
[6]The very small number of African immigrants (less than 10) is included in the “Other” category. The findings are not sensitive to their inclusion or exclusion.
[7]From here on, we drop the “non-Hispanic” term and refer simply to whites and blacks.

household head's occupational status (in analyses of income and cognitive achievement), health status during childhood (a 5-category self-rated measure ranging from excellent to poor), and current health status (measured in the same way).[8] In analyses of adults' and children's reading skills we include the language of the test (Spanish or English) and whether a language other than English is the primary language at home. When examining children's reading skills we include measures of the child's age and their parent's passage comprehension. Parents with higher reading scores spend more time reading with children or taking children to the library (Lara-Cinisomo et al. 2002), both of which may be correlated with children's exam performance.

Missing Data—We use multiple imputation to assign non-missing values for independent variables based on a set of relevant predictors (Rubin 1987). The findings are not sensitive to different methods of handling missing data, including mean imputation with dummy variables indicating missing values or listwise deletion.

Analysis

We use linear models to analyze the economic, occupational and cognitive returns to education and the role of schooling location in explaining nativity differences in these returns. We begin with a basic OLS model that examines the relationship between nativity and income, occupational status and parents' and children's cognitive skill:

$$y=\beta_0+\beta_1 N+\beta_2 X+u, \quad (1)$$

where y is the natural log of income, occupational status or reading skill; N is nativity (region of birth); X is a vector of correlated sociodemographic factors (race/ethnicity, age, etc.); and u is a normally distributed error term. This model provides a baseline estimate of nativity differences. We next add a measure of educational attainment that does not account for schooling location, to examine the contribution of educational levels to nativity differences in socioeconomic and cognitive success. This model replicates standard analyses of the role of educational levels in explaining nativity-based socioeconomic gaps. Then, we add a two- or three-category measure of schooling location as a main effect; the choice between the two- and three-category measures is based on a likelihood ratio test. Finally, we interact this measure with educational attainment to consider whether the economic, occupational and cognitive returns to education depend on schooling location. All analyses apply sampling weights to adjust for the sampling framework.[9]

This modeling strategy allows us to describe the relationships among nativity, schooling level and location, and the returns to education. As discussed above, we cannot empirically isolate the influence of schooling location from that of factors related to time in the U.S., e.g., work experience, U.S. social networks, and experience in the sending country. Any analysis of nativity differences must also acknowledge potential bias due to selective migration. If Latin American emigrants in the sample, for example, have lower average levels of education than Latin Americans who do not migrate, and if Asian immigrants are

[8]Because occupational status is partly determined by cognitive skill, analyses of reading comprehension do not include the household head's occupational status. In addition, because the data are cross-sectional and we cannot account for the possibility that current health may be endogenous to education, we estimate models with and without this measure. The findings do not differ, so we leave the measure in the model.

[9]We also obtain estimates from the subsample of Latinos/Hispanics (i.e., U.S. born Latinos and Latin American immigrants) in order to: a) examine whether the findings are driven by this large group, and b) address the possibility, to the extent possible, that returns to schooling location depend on the country/region of origin. Although small sample sizes prevent us from examining country-specific relationships, a Latino/Latin American sample will likely include less variation in school quality and content than a sample including respondents from European, East Asian and Middle-Eastern countries. The basic findings do not change when we limit the sample to Latinos.

the most educated, then any observed Latin-American disadvantage or Asian advantage may be upwardly biased.[10] We can partially address this bias by adjusting for education level, but we cannot eliminate the possibility that other factors related to the migration decision are influencing attainment.

FINDINGS

Sample Characteristics

Table 1 presents weighted descriptive characteristics, for the total L.A. FANS sample and by nativity. Over 40% of adults are foreign-born, with 28% born in Latin America, 10% born in East or South Asia and 5% born in other countries (Europe, Central Asia, the Middle East and Africa). Whereas 23% of the total sample has a college degree, only 5% of those born in Latin America do; most Latin Americans have not completed secondary school. In contrast, the majority of those born in Asia or "other" countries has a college degree.

U.S.-born respondents achieve a slightly higher occupational status on average than those born in "other" or Asian countries, followed by those born in Latin American countries. Mean logged family income is lowest among Latin American respondents. Latin American and Asian-born respondents score lowest on the reading assessments, followed by "other-born" and U.S.-born adults. Because the test was administered in only English and Spanish, low performance among Asian-born respondents may partly reflect the lack of a test in their native language. Although respondents must be able to complete the interview in English or Spanish and we adjust for the primary language spoken at home, speaking ability may be stronger on average than reading ability. Conversely, the children of Asian-born parents perform highest on average and children of Latin American-born parents achieve the lowest scores.

Associations among Nativity, Education and Attainment

Table 2 presents associations between nativity and the measures of socioeconomic and cognitive attainment; the first panel shows these relationships net of correlated socio-demographic factors but not of educational attainment and location. The unadjusted nativity differences show the expected patterns: being Latin American-born is associated with a significantly lower family income [34% lower: $(e^{-.412}-1)*100$], lower occupational status (about 9 points lower), and lower reading scores (over 7 points) than being U.S.-born. These differences are generally in the range of 0.25 to 0.50 of a standard deviation (not presented). Being born in Asia or in "other" countries is not significantly related to occupational status, but it is related to significantly lower income and passage comprehension: Asian and "other" nationalities are associated with reading scores that are 18.2 and 21.5 points lower (over two-thirds of a standard deviation), respectively, than U.S. nationality. The children of Latin Americans do not differ significantly from those of U.S.-born respondents in reading achievement. In contrast, the children of Asian-born and other-born parents outperform their peers by 17 and 9 points, respectively (or about 0.6 and 0.3 of a standard deviation).

Table 3 adds a categorical measure of educational attainment to the model. The returns to education follow the expected pattern: higher education is positively associated with income, occupational status and reading skills. Attainment of a college degree or more, for example, is associated with a 117% average increase in family income compared with completion of primary school or less schooling; an almost 16 point increase in occupational status; a 24 point increase in reading skill; and an 11 point increase in children's reading

[10]Research on the selectivity of migrants using Census and UNESCO data suggests that the average education of immigrants to the U.S. is higher than the average education of their population of origin, particularly among Asian immigrants (Feliciano 2005).

skills. These differences are large: a 16-point increase in occupational status is equivalent to almost 1 standard deviation (SD=16.46) or roughly equivalent to the difference between a retail sales clerk (ISEI score of 46) and an independent realtor (62). So far, these findings mirror existing research: higher levels of education are related to higher socioeconomic attainment and cognitive skill, and these positive associations also extend to the next generation of children.

Adjustment for education also reduces the nativity gaps in income, occupational status and reading comprehension between Latin American and U.S.-born respondents, as shown in the second panel of Table 2. The first panel of Table 2 shows the large nativity differences described above. Latin American origin, for example, is associated with an ISEI score that is 9 points lower (more than one half of a standard deviation) than the score associated with U.S. origin. The next panel of Table 2 shows that after adjusting for differences in educational attainment, the nativity differences are generally smaller. The initial difference in the income coefficients between Latin American and U.S.-born adults is reduced by about 25%. The gap in ISEI scores between Latin American and U.S.-born adults is also reduced 6 points, or from a difference of almost 0.5 standard deviations to about 0.35. Adjusting for educational attainment does not account for the lower income of Asian and “other” adults, however. Similarly, although about 30% of the lower expected passage comprehension of Latin-American-born adults is accounted for by educational attainment, the disadvantage associated with Asian and “other” nationalities increases slightly, suggesting that something unrelated to educational attainment is driving poorer performance on this assessment. Although Asian and “other” immigrants have poorer reading skills, their children still perform better, net of parents' educational attainment. The children of Latin-American-born parents are not significantly different in performance from the children of U.S.-born parents.[11]

The large disparities observed between Latin American and U.S.-born adults are reduced, but not eliminated, after considering differences in educational attainment. A significant reading disadvantage remains among all foreign-born adults, particularly among Asians and “others.” It is unclear whether these differences reflect a true skill deficiency or difficulty completing the exam in English. Either way, the lower cognitive performance observed among Asian and “other” adults does not appear to extend to their occupational success, or to the reading skills of their children.

The Role of Schooling Location

We now consider whether these relationships depend significantly on the location of schooling. Likelihood ratio tests (not shown) indicate that the dichotomy of “some/all” vs. no U.S. schooling, within each level of education, is preferable to a three-category location variable for income, occupational status and children`s reading skills. We use a dichotomous measure of schooling location similar to that used by Brastberg and Ragan (2002b). The three-category schooling location measure is strongly preferred for adults' reading score; we distinguish among no, some and all U.S. schooling.

Table 4 shows the returns to schooling location, independent of education level. The patterns generally follow the expected direction, with the exception of income: the returns to education are significantly larger when some or all of the highest level of education is received in the U.S. That is, receiving at least some U.S. education at the highest level, vs. an entirely foreign education, is significantly related to higher occupational status and

[11]To address the possibility that nativity differences depend on the language of the test, we estimated an interaction between nativity and test language in analyses of adults' and children's reading skills, but the interaction was not significant. An interaction between test language and home language was also insignificant.

stronger reading skills among children. Receiving all of one's highest level of education in the U.S. is significantly positively related to adults' reading skills. Adjusting for schooling location does little to change the magnitude of the coefficients for educational attainment.

Table 4 provides estimates of the main effects of schooling location, but does not include interaction terms to address the possibility that the effects of schooling location vary across levels of educational attainment. Interactions may also explain the seemingly counterintuitive finding in Table 4 that receiving some U.S. education at the highest level, relative to no U.S. education, is significantly negatively associated with reading comprehension.[12] Models with interaction terms are shown in Table 5. Rather than presenting the main effects of schooling level and location plus their interaction, we present alternative parameters to facilitate interpretation of their joint impact on socioeconomic and cognitive success. The first panel shows returns to education for those completing their highest level of education (and, consequently, all of their education) abroad. Next, we present differences between the coefficients for those with (at least) some vs. no U.S. education at their highest level. In analyses of adults' reading comprehension, where we incorporate an additional category of schooling location, we present a separate panel, indicating coefficient differences between respondents with all vs. some U.S. schooling at the highest level. We evaluate the significance of these differences through tests of coefficient equality within schooling levels; these results are shown within the table as asterisks next to the coefficient differences.

Wald tests of joint significance, shown at the bottom of Table 5, indicate that socioeconomic and cognitive returns to education depend significantly on schooling location: coefficients for schooling location significantly improve the fit of all models. The estimates in the first panel show the returns to schooling level among those with no U.S. education at that level. For this group, a college degree is significantly positively related to occupational success and to the cognitive performance of both adults and children.

The next panel examines whether variation in the socioeconomic and cognitive returns to education by location depends on educational attainment. For a given level of educational attainment, receiving at least some U.S. schooling is beneficial, primarily at higher levels of education. For example, whereas the first panel shows that college-educated adults who receive their schooling abroad do not have significantly higher incomes than those with a primary school education, the second panel shows that receiving some or all of that college education in the U.S. is associated with a 75% increase in family income ($e^{.562}-1$) relative to a foreign college education. Similarly, receiving some secondary education or higher in the U.S. is associated with a 3 to 8 point increase in ISEI score, relative to receiving that same level of education abroad.

The estimates for adults' reading comprehension reveal large and significant differences between those receiving some vs. all of their highest level in the U.S., among respondents with at least some college education. For example, receiving an entirely U.S.-based college education is associated with a reading score about 26 points (almost 1 standard deviation) higher than that associated with a partially U.S.-based college education. The puzzling finding described earlier in Table 4 is also apparent in Table 5 for those with a college degree: although pursuing all vs. none of the college degree in the U.S. is related to much higher reading skill (26 points, or 1 standard deviation), some college in the U.S. is associated with a 13 point *decrease* (0.5 of a standard deviation) in reading comprehension relative to attaining this level entirely abroad. There are several possible reasons for this finding, including differences in language ability; foreign-educated respondents who

[12]This is not true in the Latino-only sample, however.

completed college may be especially positively selected on pre-existing English skills, relative to their peers who completed their schooling in the U.S. Although the explanation is unknown, these findings suggest that higher cognitive performance is related to receiving an entirely, rather than partially, U.S.-based college education. Finally, parents' schooling location is less consistently associated with children's reading skills, although there is some evidence of higher performance among children of parents with some schooling in the U.S.

Schooling Location and Nativity Differences

Do differences in schooling location partially explain the remaining nativity differences in economic, occupational and cognitive attainment? The bottom panel of Table 2 presents nativity differences by outcome, adjusted for schooling levels and location. Comparisons with earlier panels in Table 2 suggest that schooling location provides some additional purchase in accounting for nativity differences, above and beyond educational attainment. The difference in the income coefficients between Latin American and U.S.-born adults is reduced by a further 17%, and those for Asians and “others” are reduced by 14% and 20%, respectively. Considering schooling location also reduces the ISEI score gap between Latin American-born adults and the U.S-born. by 36%, leaving a difference of 3.8 points, or about 0.23 of a standard deviation. Adjusting for schooling location slightly reduces the lower reading comprehension of Latin American-born adults, and reduces the disadvantage of Asian and “other-born” adults by about 30%, although significant differences remain. Adjusting for schooling location does not reduce the cognitive advantage of the children of foreign-born adults.

DISCUSSION

Increased immigration to the U.S. over the last several decades complicates the study of educational attainment and its consequences. Adults in the U.S. vary not only in how much schooling they have, but in where they receive it and in what that implies about school quality, credential signaling to employers, social networks, and ultimately economic and occupational success, cognitive skill, health status and the resources and success of the next generation. Failure to account for schooling location may lead to misrepresentation of the returns to education for the foreign born. This study increases our knowledge by describing variation in returns to education depending on where it is received and by considering whether schooling location accounts for nativity differences in returns to education. We extend the typically singular focus on economic success by considering occupational status and cognitive skill, as well as cognitive consequences in the next generation. Sizeable numbers of not only Latin-Americans, but also Asian and “other” immigrants from Europe, Central Asia and the Middle East, allow us to examine these questions among a broad population of adults and children.

Like all studies, our findings have limitations. Despite the advantages of L.A.FANS, there are two drawbacks: 1) the lack of information on years of schooling by schooling location; and 2) relatively few people with schooling in more than one location. These limitations have led us to use fairly coarse measures of schooling location. As discussed earlier, we are also unable to distinguish the effects of U.S. schooling from those of immigrant integration, U.S. work experience, and experiences in the sending country. Although more detailed data with large sample sizes would provide a small amount of leverage on this issue – e.g., from information on those who immigrate at the same relatively young age but have slightly different amounts of schooling in their home countries – it is not possible to fully distinguish the broad-ranging effects of age at immigration from those of attributes such as school quality and credentials, which are a direct consequence of respondents' educational experience. Concerns about selective migration and its impact on observed nativity differences in attainment also warrant caution in interpretation.

Despite these limitations, we establish large and significant associations that raise questions for future research. Adults with the highest levels of education have higher incomes, higher occupational status and stronger reading skills than their peers with a primary school education, and their children also exhibit stronger reading skills; this is especially (and in some cases, only) true if adults receive some or all of that education in the U.S. These findings extend those in previous studies, which have shown, at least for income, that U.S. schooling confers significantly higher benefits than a foreign education. We also find that, in general, adults who receive some or all of their college education in the U.S. have substantially higher socioeconomic attainment and cognitive skills than those receiving that same level of education entirely abroad. Moreover, their children have better reading skills than children with parents educated abroad.

These findings may be driven by differences in credential transferability, school quality, or factors related to the timing of immigration. For example, for those with a college degree, a credential more easily translates into economic and occupational success if received in the U.S. At the same time, a similar finding for cognitive skills suggests that school quality or age at immigration may be important. Those who have spent longer in the U.S., for example, may be more proficient in English reading ability than their peers who have a comparable level of education but arrived more recently. Future research should distinguish among factors related to schooling location, including school quality, credential transferability, cultural assimilation, U.S. work experience and experiences in the sending country. Each factor implies a different pathway from schooling location to social, economic and cognitive adjustment, and ultimately a potentially different response. Whether differences in schooling location indicate differences in the educational system and credentials, or differences in the stage of U.S. adjustment or the timing of immigration, understanding the socioeconomic and cognitive population-level consequences of the immigration process is important as a means of understanding immigrants' degree of success in socioeconomically integrating into the U.S. labor market, as well as potential consequences in the next generation.

With respect to nativity differences in the returns to education, we find that the explanatory power of schooling location is as important as that of schooling level. Adjusting for differences in schooling location reduces foreign-born adults' income disadvantage and accounts for close to 40% of Latin Americans' occupational disadvantage, above and beyond differences in educational attainment. Schooling level and location account for part of foreign-born adults' lower cognitive skill, but do not explain the cognitive advantage of their children. These findings suggest the importance of understanding how a U.S.-based education benefits the foreign-born and how these benefits of a U.S. education vary by nativity.

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Table 1

Weighted Sample Characteristics, by Nativity: L.A. FANS[a]

	U.S. Born	Latin America	Asia	Other	Total
Nativity	57	28	10	5	100
Level of Education					
Primary or Less	1	42	2	3	20
Some Secondary	12	24	7	4	17
Secondary	26	21	13	17	23
Some College	27	8	15	19	17
College or More	34	5	63	58	23
School Level and Location					
Primary highest, no U.S.	-	39	2	3	18
Primary highest, some U.S.	-	2	-	-	1
Primary highest, all U.S.	1	1	-	-	1
Some secondary, no U.S.	-	18	2	1	8
Some secondary, some U.S.	-	1	4	1	1
Some secondary, all U.S.	12	5	1	1	8
Completed secondary, no U.S.	-	15	8	4	7
Completed secondary, some U.S.	-	1	3	7	1
Completed secondary, all U.S.	26	6	3	5	14
Some college, no U.S.	-	3	1	1	1
Some college, some U.S.	-	1	3	9	1
Some college, all U.S.	27	4	11	9	15
Completed college, no U.S.	-	2	22	22	3
Completed college, some U.S.	-	1	15	9	2
Completed college, all U.S.	34	2	25	27	19
Race/Ethnicity					
Non-Hispanic White	59	1	2	73	38
Latino/Hispanic	16	97	0	16	38
Asian/Pacific Islander	18	0	97	8	14
Black	6	2	0	3	10

	U.S. Born	Latin America	Asia	Other	Total
Male	49	54	47	47	50
Undocumented	0	35	0	0	10
Married	48	48	63	63	50
Mean Age	45	38	45	44	42
Mean Current Health	2.3	2.8	2.2	2.0	2.4
Mean Childhood Health	1.8	2.2	1.9	1.8	1.9
Mean Number of Children in HH	0.8	1.5	1.5	1.0	1.0
Mean Occup. Status of Childhood Head	43	34	52	47	42
Mean Occup. Status of Current Head	49	32	47	48	44
N	1328	1336	168	146	2998
Mean Logged Family Income	3.6	2.7	3.4	3.5	3.2
N	1319	1336	168	147	2969
Mean Adult Passage Comp. Score	39.6	12.1	19.6	29.0	24.9
Test Taken in Spanish (vs. English)	1	82	0	0	27
Non-English Language Primary at Home	27	47	82	63	38
N	719	818	100	90	1727
Mean Child Reading Score	52.5	45.7	64.2	53.1	51.4
N	598	757	84	83	1522

[a]Numbers in cells are percentages unless mean is indicated. Distributions may not sum to 100 because of rounding.

Table 2

Nativity Differences in Financial, Occupational and Cognitive Returns: L.A. FANS[a]

Variable	Logged Family Income	Adult Occupational Status	Adult Passage Comprehension	Child Reading Skill
Education Not Included				
Born in Latin America	−0.412**	−8.965**	−7.369**	2.650
	(0.097)	(0.83)	(2.10)	(3.00)
Born in South/East Asia	−0.700**	0.335	−18.185**	17.219**
	(0.21)	(1.89)	(3.79)	(5.00)
Born in Other Country	−0.516**	−1.015	−21.546**	9.413**
	(0.14)	(1.25)	(2.40)	(3.28)
Constant	2.811**	51.631**	21.658**	49.315**
	(0.21)	(1.64)	(3.49)	(8.17)
Educational Level				
Born in Latin America	−0.310**	−5.905**	−5.049*	3.608
	(0.10)	(0.84)	(2.00)	(3.02)
Born in South/East Asia	−0.737**	−0.138	−21.974**	15.748**
	(0.21)	(1.80)	(3.60)	(5.03)
Born in Other Country	−0.560**	−1.853	−22.929**	8.045**
	(0.14)	(1.19)	(2.27)	(3.31)
Constant	2.542**	42.147**	10.399**	1.276
	(0.23)	(1.79)	(3.68)	(3.31)
Educ. Level/Location				
Born in Latin America	−0.257*	−3.786**	−4.238*	4.889
	(0.12)	(0.96)	(1.87)	(3.09)
Born in South/East Asia	−0.636**	1.069	−15.240**	16.951**
	(0.22)	(1.82)	(3.66)	(5.07)
Born in Other Country	−0.447**	−0.678	−15.194**	9.043**
	(0.15)	(1.24)	(2.57)	(3.43)
Constant	2.490**	38.904**	4.026*	40.088**
	(0.25)	(1.95)	(4.06)	(8.59)
N	2969	2998	1767	1522

Income and occupation samples include both RSAs and PCGs. Reading comprehension sample includes only PCG respondents. For children's reading skill, sample includes RSC and sibling respondents. All models also include race/ethnicity, age, sex, marital status, number of children in household, health during childhood, present health, documentation status, occupational status of household head at age 14, and occupational status of current household head (except occupational status and adult passage comprehension models). Adult and child reading skill models control for the language of the test and whether a non-English language is spoken at home. Child reading skill model also controls for child's age and parent's reading comprehension score.

[a]Standard errors in parentheses. Coefficients are from linear regression models. Omitted nativity category is U.S.-born.

*$p < .05$;

**$p < .01$

Table 3

Financial, Occupational and Cognitive Returns to Adults' Schooling Level: L.A. FANS[a]

Variable	Logged Family Income	Adult Occupational Status	Adult Passage Comprehension	Child Reading Skill
Some Secondary	0.189 *	1.927 *	3.025 †	5.585 *
	(.10)	(0.84)	(1.62)	(2.24)
Secondary	0.236 *	3.264 **	3.862 *	3.553
	(0.10)	(0.84)	(1.64)	(2.36)
Some College	0.360 **	8.871 **	12.617 **	7.586 **
	(0.12)	(0.96)	(1.89)	(2.74)
College or More	0.777 **	15.688 **	24.484 **	10.706 **
	(0.12)	(1.00)	(1.99)	(3.00)
N	2969	2998	1767	1522

Income and occupation samples include both RSAs and PCGs. Reading comprehension sample includes only PCG respondents. For children's reading skill, sample includes RSC and sibling respondents. All models also include race/ethnicity, sex, marital status, number of children in household, health during childhood, present health, documentation status, occupational status of household head at age 14, and occupational status of current household head (except occupational status and adult passage comprehension models). Adult and child reading skill models control for the language of the test and whether a non-English language is spoken at home. Child reading skill model also controls for child's age and parent's reading comprehension score.

[a]Standard errors in parentheses. Coefficients are from linear regression models. Omitted category of education is completion of primary school or less.

* $p < .05$;

** $p < .01$

Table 4

Financial, Occupational and Cognitive Returns to Adults' Schooling Level and Location: Main Effects. L.A. FANS[a]

	Logged Family Income	Occupational Status	Adult Passage Comprehension	Child Reading Skill
Schooling Location				
Some U.S. Education at Highest Level	0.104	3.390**	−4.669*	5.138*
	(0.098)	(0.82)	(2.08)	(2.44)
All U.S. Education at Highest Level			7.925**	
			(1.79)	
Schooling Level				
Some Secondary	0.168	1.224	2.417	4.586*
	(0.10)	(0.86)	(1.63)	(2.29)
Secondary	0.212*	2.453**	3.226	2.430
	(0.10)	(0.86)	(1.66)	(2.42)
Some College	0.327**	7.708**	11.310**	6.016*
	(0.12)	(1.00)	(1.92)	(2.84)
College or More	0.751**	14.733**	23.691**	9.459**
	(0.13)	(1.02)	(2.00)	(3.06)
Constant	2.451**	38.958**	1.788	40.336**
	(0.25)	(1.95)	(4.12)	(8.56)
N	2969	2998	1767	1522

Income and occupation samples include RSAs and PCGs. Adult reading comprehension sample includes PCG respondents. Children's reading skill sample includes RSCs and siblings. All models control for race/ethnicity, age, sex, marital status, number of children in household, health during childhood, present health, documentation status, occupational status of household head at age 14, and occupational status of current household head (except occupational status and adult passage comprehension models). Adult and child reading skill models control for the language of the test and whether a non-English language is spoken at home. Child reading skill model also controls for child's age and parent's reading comprehension score.

[a]Standard errors in parentheses. Omitted schooling location category is no U.S. at highest level. Omitted category of education is primary highest. Analyses of income, occupation and children's reading skill distinguish between some/all and no U.S. schooling. Analyses of adult reading comprehension distinguish among all, some and no U.S. schooling.

*p<.05;

**p<.01

Table 5

Financial, Occupational and Cognitive Returns to Adults' Schooling Level and Location. L.A. FANS[a]

	Logged Family Income	Occupational Status	Adult Reading Comprehension	Child Reading Skill
Some secondary highest, no U.S.	0.207	1.243	4.075*	5.286*
	(0.12)	(1.04)	(1.93)	(2.62)
Secondary highest, no U.S.	0.151	1.689	4.902*	2.136
	(0.13)	(1.08)	(2.04)	(2.99)
Some college highest, no U.S.	0.234	3.675	4.925	−0.0889
	(0.26)	(2.21)	(3.84)	(5.58)
College or more highest, no U.S.	0.306	14.311**	18.592**	13.680**
	(0.20)	(1.64)	(3.02)	(4.60)
Coefficient Difference of Some vs. No U.S.				
Primary highest	−0.301	0.0254	0.037	8.4
Some secondary highest	−0.359	2.897*	1.797	4.47
Secondary highest	0.129	4.264**	−4.79	6.52*
Some college highest	0.154	7.627**	3.095	−12.613
College or more highest	0.562**	3.774*	−13.45**	1.256*
Coefficient Difference of All vs. Some U.S.				
Primary highest			2.451	
Some secondary highest			−0.279	
Secondary highest			7.463	
Some college highest			9.67*	
College or more highest			26.17**	
Constant	2.708**	38.949**	4.026	40.088**
	(0.26)	(1.95)	(4.06)	(8.59)
Wald Joint Significance Test for Schooling Location				
χ^2 (9)	6.27	39.58		2.55
p> χ^2	0.00	0.00		0.01
χ^2 (14)			20.49	
p> χ^2			0.00	
N	2969	2998	1767	1522

Income and occupation samples include RSAs and PCGs. Adult reading comprehension sample includes PCG respondents. Children's reading skill sample includes RSCs and siblings. All models control for race/ethnicity, age, sex, marital status, number of children in household, health during childhood, present health, documentation status, occupational status of household head at age 14, and occupational status of current household head (except occupational status and adult passage comprehension models). Adult and child reading skill models control for the language of the test and whether a non-English language is spoken at home. Child reading skill model also controls for child's age and parent's reading comprehension score.

[a]Standard errors in parentheses. Omitted schooling level/location category is primary highest, none in U.S. Analyses of income, occupation and children's reading skill distinguish between some/all and no U.S. schooling within each level. Analyses of adult reading comprehension distinguish among all, some and no U.S. schooling within each level.

*p<.05;

** p<.01 Asterisks in panel one indicate significance relative to omitted category. Asterisks in panels two and three indicate significance of the coefficient differences, obtained via Wald equality tests.