Tiger Children? Academic Trajectories of Asian Children of Immigrants Across Three Continents: United States, United Kingdom and Australia

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Abstract

Asian immigrants are considered "model minorities." Studies on the educational achievement of Asian immigrants, however, are limited on two fronts. First, we do know whether their educational advantage over native Whites are found outside the U.S. This understanding is necessary to determine whether the cultural disposition of Asian immigrants is a protective factor facilitating their integration. Second, most studies on the achievement of children of Asian immigrants use cross-sectional analysis. Longitudinal analysis is necessary to determine whether the achievement trajectories of children of Asian immigrants follow a straight-line pathway or diverges over time with the direction of trajectories depending on family origin. Using cohort studies, we document variations in the educational trajectories of Asian immigrants and natives in Australia, the U.K and the U.S. We also examine to what extent racial disparities in parenting practices give rise to differences in the trajectories of the children of Asian immigrant and natives.

EXTENDED ABSTRACT

Introduction

Globalization has given rise to unprecedented levels of international migration. Nearly one out of every 33 people, or 214 million people, living in the world today is a migrant (UN, Trends in Total Migrant Stock). Many of these migrants are children and their socioeconomic integration has come to the forefront of academic and public policy debates worldwide. The case of Asian immigrants are of particular interest both because they dominate the flows of international migration[1] and because in contrast to other immigrant groups, they have managed to achieved equal or superior standing relative to Whites with respect to their educational and occupational attainment (Chan 1991; Sakamoto 2009).

A major factor motivating the portrayal of Asian immigrants as "model minorities" is their higher educational attainment (Chan 1991). Asian Americans have more favorable educational outcomes than other race/ethnic groups (Hsia 1988, Kao 1995; Sakamoto et al. 2009; Xie and Goyette 2003). These studies often attribute the higher educational performance of the children of Asian immigrants to (1) parenting practices and (2) positive selection or the higher levels of human and financial capital Asian immigrants typically possess relative to the native population (Hao and Bostead-Bruns 1998; Kao 1995; Pong et al. 2005; Xie and Goyette 2003).

Although many studies have documented the educational outcomes of Asian immigrants, our understanding of this issue is limited on two fronts. First, most research documenting the educational trajectories of Asian immigrants has been conducted in the United; and therefore, we do not know whether the educational advantage of Asian immigrants in the United States similarly describe the achievement patterns of the children of Asian immigrants in other settings.

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[1] Nearly 30 percent of the global stock of international migrants is born in Asia.

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Likewise, we do not know whether the commonly cited explanations for Asian American achievement—parenting behavior and positive selection—also explain immigrant/native gaps in educational achievement in the United States. The second limitation is that past studies usually compare the educational outcomes of the children of Asian immigrants and native-born groups at a single point in time. By design, these studies cannot decipher when the disparities emerge and whether they converge or diverge over time. This understanding, however, is essential for ascertaining whether the achievement trajectories of children of Asian immigrants follow a uniform straight-line pathway or diverges over time with the direction of achievement trajectories depending on family origin (Alba and Nee 2003; Portes and Zhou 1993; Zhou 1997).

Our study offers the first systematic test of the Asian model minority hypothesis from a comparative perspective by documenting variations in the academic trajectories of Asian immigrants and native-born Whites in the United States, United Kingdom, and Australia. We will first document differences in the parenting practices between Asian immigrant and native-born White mothers. We will then assess whether Asian immigrant mothers in the three countries are more likely to engage in parenting practices that promote the educational success of children. Finally, we will assess to what extent racial differences in parenting practices explain variations in the educational trajectories between the children of Asian immigrant and native-born White mothers. Each analysis is disaggregated by mother's skill and income level as a way to net out the educational benefits that accrue due to the positive selectivity of immigrants.

Our abstract consists of five parts. Section II reviews the literature. Section III illustrates why the children of Asian immigrants may have more favorable educational trajectories than the children of native-born Whites. Section IV describes our data and methods. Section V presents out empirical results. Section VI discusses our preliminary findings.

Background

Educational Attainment of Asian Immigrants and Model Minority Hypothesis

The portrayal of Asian immigrants as "model minorities" has been motivated by the observations of the higher educational attainment of the children of Asian immigrants in the United States (Sakamoto 2009). Past studies have shown that children of Asian immigrants in the United States have favorable academic outcomes than their counterparts in other race/ethnic groups. According to these studies, children of Asian immigrants score higher in standardized tests, obtain better grade, enroll in more AP courses, and have higher educational attainment than Whites (Caplan et al. 1991; Hsia 1988; Kao 1995; Xie and Goyette 2003; Zhou & Bankston 1998). Although evidence is somewhat sparse, there is evidence in support of the view that children of Asian immigrants in Australia and the United Kingdom also outperform their peers. In the United Kingdom, children of Chinese and Indian immigrants surpass the White population in terms of standardized test scores (Wilson et al. 2006; Sammons 1995; Conolly 2006). In Australia, Cobb-Clark (2003) finds that Australians from non-English speaking immigrant families tend to outperform their Australian peers. Although this study does not specifically compare the educational achievements of the children of Asian immigrants and Australian Whites, we can make inferences about their relative educational performance as most non-English speaking immigrants into Australia are Chinese immigrants and the majority of Australians are Whites.

The higher educational attainment of Asian immigrants to the United States is attributable to two broad explanations (Sakamoto et al. 2009; Xie and Goyette 2003). The first explanation deals with immigrant selectivity. We know from stratification research that children of better-educated parents tend to have higher educational attainment themselves (e.g., Blau and Duncan

1967). Therefore, the positive selection of immigrants according to traits that also positively predict children's attainment outcomes, such as parents' education and skills, may account for the achievement success of children of immigrants.

The second explanation focuses on the particular cultural value Asian societies assign to education which motivate parenting practices in ways that better promote children's educational attainment. In the United States, we know that Asian parents have higher education expectations for their children relative to any other ethnic group (Kao and Tienda 1995; Goyette and Xie 1999; Chen and Stevenson 1995; Wong 1980). These differences are reflected in parenting practices. For example, studies comparing Chinese immigrant and White parents of children aged 3-6 years old find that Chinese parents were more likely than Whites to believe in the importance of early academic training for children (Parmar et al. 2004). Chinese-immigrant parents were also more likely to adopt the role of "teacher" during play time with children by practicing letters and doing math games (Huntsinger et al. 1997). Euro-American parents, on the other hand, placed more value and spent more time on free-play activities. These findings highlight the fact that the skills that are valued and cultivated by Asian immigrant parents may more directly focus on the type of skills that facilitate children's academic achievement.

To date, comparable studies that examine differences in parenting practices between Asian immigrants and native Whites in the U.K. and Australia, as well as studies that relate these differences to achievement gaps, are rare. As such, we can only speculate as to whether any of the findings discussed above are also applicable to the experiences of Asian immigrants and their children in other Western industrialize countries. For example, we do not know whether the particular orientation Asian American parents have toward education is due to immigrant selectivity (i.e. Asian immigrants who value education are more likely to migrate to the United

States versus other countries) or is a more general phenomenon. Our study is the first of its kind to systematically document these patterns and related differences in parenting practices to achievement outcomes from a cross-country perspective.

Immigrant Selectivity and Context of Incorporation in the United States, United Kingdom, and Australia

Cultural disposition towards education, immigrant selectivity, and context of incorporation interact to engender the educational trajectories of the children of immigrants. In this section, we compare the immigration policies and settlement policies in the three countries and assess how they may affect the educational trajectories of the children of Asian immigrants in each country.

Admission Criteria and Asian Immigrants

The United States, United Kingdom, and Australia all admit immigrants on family, labor market and humanitarian grounds, but they differ on the types of Asian immigrants they attract. In the United States, the majority of Asian immigrants enter the United States under the high skilled visa category, which is designed to facilitate the migration of persons with extraordinary abilities as well as college graduates with the skills necessary to work in industries facing labor shortages (Wasem, 2007). As a result of these policies, Asian immigrant parents in the United States tend to have more advantageous socioeconomic conditions than their native-born peers, which may provide a more propitious family background for academic performance be conducive to higher academic performance.

Asian immigrants to Australia also take advantage of their skilled visa categories in the same manner as their counterparts in the United States. The educational composition of Asian immigrants in Australia differs somewhat with those of their counterparts in the United States

because the two countries apply distinct definitions to the category "skilled migrant (Wasem 2007). Whereas skilled immigrants in the United States are comprised of highly educated individuals, the skilled migrant category in Australia consists of both semi- and high-skilled immigrants in Australia (Walsh 2008). As a result, Asian immigrants in Australia will have a more disadvantageous socioeconomic background han their counterparts in the United States (Productivity Provisions 2010; Walsh 2008).

The United Kingdom likely has the most heterogeneous group of Asian immigrants. Unlike the United States and Australia where the primary focus of immigrant labor is the recruitment of individuals to fill labor shortages, immigration policies in the United Kingdom is driven by its colonial past and draws heavily from Commonwealth countries, such as India, Pakistan, and Hong Kong (Layton-Henry 2001). Furthermore, a much larger share of the immigrant population in the United Kingdom consists of asylum seekers (Zimmermann et al 2004).

On the basis of immigration policies alone, it appears to be the case that the Asian immigrant population in the United States will likely have the most favorable socioeconomic outcomes; and therefore, it is unclear whether the favorable educational outcomes of Asian immigrants will continue to hold in the United Kingdom and Australia.

Context of incorporation

The academic performance of Asian children will also be influenced by the conditions and attitudinal climate regarding immigrants in the country of reception, which differ along various dimensions across the three countries. We concentrate our discussion on differences in access to public services below. Firstly, differential access to social welfare system may also give rise to differences in academic trajectories of immigrant children among the three countries.

The U.S. is the most stringent in terms of allowing immigrant access to public welfare. Most U.S. immigrants are excluded from federally funded and state funded grants, including unemployment insurance, food stamps, non-emergency MEDICARE, and old age pensions until they become a citizen (Antecol et al. 2003; Freeman and Birrell 2001). Australia is the most generous of all three countries in that immigrants are eligible for most types of public support following a two-year moratorium (Walsh 2008). Relative to the United States and Australia, the United Kingdom is somewhere in between. While all legal immigrants to the United Kingdom have access to free healthcare (Jayaweera 2001), regardless of citizenship, they are denied most publicly funded services such as housing benefits, income support and pension credit (Welfare Rights Bulletin, 2005).

As a result of these differences in the access to publicly fund programs, one might expect the children of immigrants in the U.S. to be at greater risk of experiencing absolute poverty compared to their counterparts in Australia and to a lesser extent the United Kingdom. Access to the social welfare system absorb some of the economic shocks and diminish economic stressors for immigrant families in Australia, which could have pernicious effects on children's academic performance.

ANALYTICAL PLAN

The paper consists of two parts. The first part will compare the academic trajectories of children and Asian immigrant and native-born White mothers to determine whether the Asian model minority hypothesis applies to the Asian immigrants in the three countries of destination. To do so, we will conduct country-specific analysis that ascertains how the academic performance of the children of Asian immigrants compares with those of their counterparts born to native-born White mothers. We will then conduct cross-national analyses comparing the

academic trajectories of the children of Asian immigrant and native-born White mothers in the United States, United Kingdom, and Australia. We are particularly interested in documenting achievement gaps in early childhood and assessing whether immigrant/native achievement gap persists (or subsides) after children begin elementary school.

The second part of the analysis will compare the parenting practices of Asian immigrant and native-born mothers. To do so, we will conduct country-specific analysis comparing the parenting practices of Asian immigrant and native-born White mothers. Next, we will conduct a cross-national comparison of the parenting practices of Asian immigrant in the three countries. We will follow this analysis by documenting how parenting practices of each racial group changes over time and assess whether the racial gap in parenting practices converges (or diverges) over time. Lastly, we will investigate whether racial disparities in parenting practices give rise to the educational gap between the children of Asian immigrant and native-born White mothers.

Each analysis further disaggregates children by family socioeconomic characteristics to account for the fact that (1) education is an important determinant of parenting style; (2) academic trajectories of children differ vastly depending on family background; and (3) an explanation for the educational success of Asian immigrants is parent's high levels of education.

DATA AND METHODS

Data

To document variations in the parenting practices and academic trajectories between Asian immigrants and native-born Whites, we use data from three cohort studies: (1) the American Early Childhood Longitudinal Study (ECLS); (2) Longitudinal Study of Australian Children (LSAC); and the (3) Millennium Cohort Study (MCS).

The ECLS-K[2] is a national study that follows 21,409 children who enrolled in kindergarten programs in the U.S. in the fall of 1998. The study, which contains a large sample of racial minorities and children of immigrants (approximately 20 %), includes detailed measures of socio-demographic profiles of parents, availability of educational resources at home and in school, and educational outcomes. Follow-up interviews were conducted in the spring of 1999, spring of 2000, spring of 2002, spring of 2004, spring of 2007, and for a subsample, fall of 1999. These years roughly correspond to data collection at ages 5, 6, 7, 9, 11, and 14. Assessments in math and reading were collected in all waves. We use data collected at ages 5, 6, and 7.

The LSAC is a nationally representative study that follows approximately 5,000 children born between March 1999 and February 2000 and living in Australia in 2004 (Gray and Smart 2008). The study includes detailed measures about children's home environments and children outcomes. Follow-up interviews were collected at ages 6 and 8.

The MCS is a national longitudinal birth cohort study that follows approximately 19,000 children born in 2000 and 2001. The study includes information about children and their families in the four countries of the United Kingdom. Wave 1 data was first collected from parents when the sampled respondents were nine months old. The main caregiver, usually the mother, was interviewed again when the child was 3, 5, and 7.

These cohort studies are well-suited for our purposes here because they collected detailed information on parenting practices, including time spent with child and parenting styles, and child assessments in 3 or more waves of data. Second, these studies also include detailed information on parent's socio-demographic characteristics, including mother's region of birth, and educational resources available at home, which have been identified by prior work as key determinants of cognitive development. Third, each dataset is nationally representative.

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[2] http://nces.ed.gov/ecls/

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Despite the many advantages, the use of three cohort studies to ascertain cross-national differences in the academic trajectories of immigrants is not without limitations. A key limitation stems from the fact that the three cohort studies did not conduct the same assessments to measure the respondent's verbal skills. While ECLS-K reports the respondent's Reading IRT scores, MCS collected the British Ability Scales Naming Vocabulary (BAS-NV) test and LSAC-K conducted the Peabody Picture and Vocabulary Tests. Although the three assessments measure verbal ability, they focus on different aspects of verbal ability and some of the cross-national variations may be attributable to differences in assessment instruments. In recognition of this limitation, we standardize the assessments and focus our attention on the achievement gap between children of immigrant and native-born mothers. Second, ECLS-K and MCS did not collect reports on mother's country of birth in the baseline. ECLS-K did not collect reports on mother's country of birth until its third wave. MCS did not collect reports on mother's country of birth until its second wave. Native born children who drop out of the data represent a more negatively selected group compared to immigrant children in the U.S. who dropped out of the data. This pattern of attrition will likely understate the gap in testing scores between immigrant and native born children. Third, data were not collected at exactly the same ages. Specifically, whereas ECLS-K conducted its assessments in ages 5, 6, and 7; LSAC-K conducted the assessments in ages 4, 6, and 8; and MCS collected assessments 3, 5, and 7. However, in light of the fact that the slope of Asian immigrants are increasing at a slower pace in the U.S. and at a rapid pace in Australia, having distinct end points likely understate cross-national differences.

Sample

We restrict our sample to the offspring of Asian immigrant and native-born White mothers, who are living with their biological mothers when their mothers reported their country

of origin. We also exclude children born abroad because they are recent migrants, who may have not acquired the linguistic proficiency necessary to take the verbal assessments. Our sample is further limited to those cases where mothers provided valid information regarding their race/ethnicity, country of birth, and mother's education. We also exclude children who are substantially older or younger than their peers at the time of the assessment because their scores may be age dependent. Applying these restrictions yields a sample of 8,082 children in the U.S. (7,538 native born Whites and 544 foreign-born Asian); 7,358 children in the United Kingdom (6,781 native-born Whites and 577 foreign-born Asians); and 3,764 in Australia (3,469 native born Whites and 295 foreign-born Asians).

Measures

Dependent variable.

Time Spent with the Child. Each survey asks mothers to report the amount of time the respondent child spends with a family member on activities that promote academic success (e.g. reading a book, playing music, telling a story). We use exploratory factor analyses on the various activity items to construct a latent variable measuring the degree of parental involvement. The latent variable is then converted into a scale ranging from 0 to 100. It yields a percentile score for the amount of time a respondent child spends with their family.

Warm parenting. Each survey asks mothers to report the frequency with which they engage in warm parenting (i.e. praise the child, hugging the child, monitoring the child). We also use exploratory factor analyses on the various reports on warm parenting and construct a latent variable measuring the degree of warm parenting. This variable is also converted into a scale ranging from 0 to 100.

Aggressive parenting. Each survey asks mothers to report the frequency with which they have a negative interaction with the child (e.g. express annoyance, punish, yell, express disappointment). We use factor analysis on these questions and construct a latent variable measuring the degree to which the parent engaged in aggressive parenting. The variable is also converted into a scale ranging from 0 to 100.

Children's Test Scores. For the United States, we use the Reading Item Response Theory (IRT) Scores collected at ages 5, 6, and 7. For the United Kingdom, we rely on the British Ability Scales Naming Vocabulary (BAS-NV) test collected at ages 3, 5, and 7. For Australia, we rely on the Peabody Picture Vocabulary Tests III (PPVT) scores, which are collected at ages 4, 6, and 8. Although each test is designed to capture child's verbal ability, they are standardized at each wave to account for the fact that they are distinct test.

Independent variable.

Mother's region of birth and Maternal Skill. We rely on mother's self reports of race, ethnicity, country of birth, and education to classify children into four categories: (1) Native-born Whites with low skill; (2) Native-born Whites with high skill; (3) Foreign-born Asians with low skill; and (4) Foreign-born Asians with high skill. For simplicity, we refer to native-born Whites as "Whites" and foreign-born Asians as "Asian immigrants".

High skilled immigrants refer to individuals with a college degree or more and *low skilled immigrants* refer to individuals with some postsecondary schooling or less. We further distinguish each group in accordance to their skill as the context of reception for high skilled immigrants may vastly differs from those of low skilled immigrants in the same host country. Our decision to classify high skilled immigrants as those who have at least a college degree is motivated by the fact that college degree is generally the prerequisite for high skill visas.

Mother's Region of birth and Household Income. We classify children into four categories in accordance to their mother's race, mother's nativity status, and household income: (1) Whites in non-affluent[3] households; (2) Whites in affluent households; (3) Asian immigrants in non-affluent households; and (4) Asian immigrants in affluent households. Children are said to reside in "affluent households" if the reported household income is in the top quintile of the national distribution of household income.

Control variables. Our growth curve models also include controls for several socio-demographic characteristics, which are known determinants of academic performance. The control variables are *child's gender* (female vs. male); *low birth (*child was born weighing less than 2500 g vs. child was born weighing 2500 g or more*); number of siblings at each wave; mother's employment at each wave; child's health* (good or less, very good, and excellent)*; mother's age at birth; mother's marital status at each wave* (married vs. unmarried); *English* proficiency (Other language is spoken at home vs. Only English is Spoken at Home).

Statistical techniques

We plan to use lagged ordinary least square and growth curve models to describe racial differences in parenting practices as well as variations in the educational trajectories of the children of Asian immigrants. Our lagged ordinary least square models predict the parenting practices and test scores of the respondents using the independent and control variables from the prior wave and can be formally expressed as follows:

$$P_t = \alpha + \delta R + \sum \beta_t \cdot X_{(t-1)} + \sum \gamma \cdot C + \varepsilon_{t-1}$$

and

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[3] We plan to explore these analyses using different categorizations of household income

$$Y_t = \alpha + \delta R + \sum \pi_t \cdot P_{(t-1)} + \sum \beta_t \cdot X_{(t-1)} + \sum \gamma \cdot C + \varepsilon_{t-1}$$

where P denotes parenting practices; Y denotes educational attainment and R denotes the racial groups disaggregate by mother's skill or family income; X denotes time varying covariates and C represented time-constant covariates.

We also employ two level growth curve models to compare the academic trajectories of immigrant children. Level 1 models changes in child-specific test scores over time (i.e. within individual effects). Level 2 models the variation in mean initial cognitive scores and growth rates for children of Asian immigrants and native-born White (i.e. across individual effects). In these models, the intercept documents initial differences in test scores and the slope shows which group has a faster (or slower) learning pace over time. Age was centered so that the initial status refers to the fall semester of kindergarten in the U.S. (i.e. baseline) and age 4 (i.e. baseline) in Australia.

PRELIMINARY RESULTS

(A) Educational Disparities between Asian immigrants and native-born Whites

Descriptive Statistics

Table 1, which displays the distribution of schooling for Asian immigrant and White mothers, shows much lower levels of education in Australia compared with the U.S. Whereas just over 5 percent of U.S. mothers have completed fewer than 12 years of schooling, nearly half of Australian mothers fit this description. Furthermore, Australian mothers are also considerably less likely than mothers in the U.S. to have obtained a bachelors degree. Approximately a third of mothers in the U.S. have a Bachelors degree as compared to a quarter of Australian mothers. Most of these differences are due to the fact that native born mothers in Australia, largely comprised of Whites, have considerably lower levels of education than Whites in the U.S.

However, cross-national comparisons of the distribution of educational attainment among Asian immigrants also show that mothers residing in Australia have somewhat lower levels of education than their counterparts in the U.S., although the cross-national difference is not to the same extent as Whites. This finding highlights the importance of documenting differentials specific to mother's skill.

Table 1 goes about here.

Our results also suggest that immigration policies have implications for the skill mix of immigrants relative to the host population in both countries. In Australia, Asian immigrants have considerably higher levels of education than their White counterparts. This pattern likely arises because of the point system. Under this system, immigrants to Australia must have acquired educational credentials certifying their skill proficiency in order to gain legal entry. Thus, thirty-six percent of Asian immigrant mothers, compared with 22 percent of White mothers, have obtained a college degree. In the United States, Asian immigrants are both more likely than Whites to have a college degree and less likely to have completed high school. Ten percent of Asian immigrant mothers had not completed high school; whereas just under 50 percent had a college degree, as compared to 6 percent and 31 percent of native-born Whites, respectively. This bimodal educational distribution is likely attributable to the fact that Asian immigrant to the U.S. gained entry under both: the high skilled and family reunification visas.

Having established cross-national differences in education, we next compare the socio-demographic characteristics of children in accordance with their mother's immigrant status and skill level. The results are presented in Table 2. Four features are noteworthy. First, Australian children have lower preschool attendance rates compared to children living in the U.S. For instance, 40 percent of Australian children born to low skilled Whites had enrolled in preschool

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as compared with 75 percent of their counterparts in the U.S. Comparisons by immigrant status and skill reveal that children of Asian immigrants are more likely to attend preschool compared to their White peers, whereas the opposite pattern holds for the U.S. Another notable feature of the table is that Asian immigrant mothers in both countries are more likely to be married compared to White mothers, which is likely due to bias immigration policies in both countries have towards married over single women. Third, Whites and Asian immigrants in the U.S. appear to be less likely to live below the poverty line than their counterparts in Australia. For example, 29 percent of children born to low skilled Whites in Australia live in poverty as compared with 20 percent in the U.S. When we compare Asian immigrants in the two countries, we find that Asian immigrants in Australia also have a poverty disadvantage. For example, nearly 30 percent of low skilled Asian immigrants in Australia lived below the poverty line, whereas only 20 percent of their counterparts in the U.S. fit this description. Fourth, Asian immigrant mothers in Australian are less likely to speak English at home compared to their co-ethnics residing in the U.S. This pattern, which is inconsistent with more stringent English requirements in Australia than the U.S., is likely attributable to variation in the way English use at home is measured in the two surveys. Whereas ECLS-K asks respondents to report the main language spoken at home, LSAC asks each parent to report the language they speak at home. For this round of analyses, the household was classified as English-speaking if either parent spoke English at home. In future rounds of data analyses, we plan to conduct consistency checks about the construction of these variables.

Table 2 goes about here.

Table 3, which reports variations in the academic trajectories of children by mother's nativity and skill level, reveals that achievement differences are strongly associated with

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mother's skill level. Children with college educated mother consistently outperform their peers whose mothers have lower levels of education. To a lesser extent, the academic performance of children differs depending on their mother's nativity status and the pattern varies across the two countries. In the U.S., the children of low skilled Asian immigrants have the same initial scores as their peers with similarly educated White mothers. An achievement gap between low skilled Asian-born mothers and native born whites, however, emerges over time. By age 9, the scores of children of immigrant mothers are approximately 5 percent [(130-123)/130*100] lower than those of white mothers. In contrast, the children of high skilled Asian mothers have initial test scores that are approximately 10 percent [(45-41)/41*100] higher than the children of high skilled white mothers, but their academic advantage decreases over time. In fact, the test scores of children born to Asian immigrants are approximately 3 percent lower [(142-146)/146*100] at age 9 than those of children born to native-born Whites with a college degree.

Table 3 goes here.

In Australia, the children of Asian immigrants have lower initial scores compared to Whites, regardless of mother's skill level. For example, the initial scores for children of high skilled Asian immigrants are 6 percent [(63-67)/67*100] higher than the scores of the children of high skilled Whites. Over time, the scores of Asian immigrants increase at a faster pace and converge with those of Whites. The analyses presented thus far only adjust for mothers' education. In the next section, we conduct multivariate analyses to determine if these gaps persist after controlling for other difference between immigrant and native born mothers.

Multivariate analysis

Tables 4 and 5 present parameter estimates from growth curve models comparing the academic trajectories of children with differing mother's region of birth and skill level for the

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U.S. and Australia, respectively. For both the U.S. and Australia, the introduction of controls for children's socio-demographic characteristics, family background, and English proficiency explain some of the initial group differences in test scores and pace of learning (i.e. growth rates). However, most of the differences remain even after we introduce the controls. In the U.S., controls for children's socio-demographic characteristics and family background explain a considerable portion of the achievement gap between the children of low and high skilled native-born Whites. Specifically, with the addition of socioeconomic controls, the gap in initial test scores between these two groups diminishes by 14 percent, from 4.6 to 3.3. This finding suggest that socioeconomic differentials in academic achievement emerge early in life. Net of controls for language use, immigrants have initial test scores that are 2 points higher than those of their White peers whose mothers have comparable levels of education. That English use suppresses the gap among low skilled Whites and the two Asian immigrant groups suggests that inadequate English proficiency prevent immigrants from performing at even higher levels at age 5.

Tables 4 and 5 go here.

With a few exceptions, the addition of control variables has little effect on the growth rates. The most notable exception occurs to the growth rates of high skilled Asian immigrants when we add controls for English proficiency. Not having adequate levels of English proficiency appears to have suppressed the growth rates of high skilled immigrants. Once we controls for English proficiency, the scores of high skilled Asian immigrants increase at a much higher rate.

In Australia, controls for children's socio-demographic characteristics, family background, and English explain very little of the group differences in initial scores or growth rates. There are, however, two noteworthy exceptions. First, once we control for family background, high skilled Asian immigrants no longer have lower initial scores compared to low

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skilled Whites. Additionally, once we control for these characteristics, differentials in the magnitude of the growth rates between Asian immigrants and Whites is somewhat reduced.

Using the parameters obtained from Tables 4 and 5, we compute the predicted age-specific test scores for Asian immigrants and native born White in Australia and the U.S., net of children's socio-demographic characteristics, family background, and English use. The country-specific results are presented in Figures 1 and 2, respectively. Consistent with our descriptive findings, the demarcating difference in academic performance depends on mother's skill level. Yet, academic trajectories differ depending on mother's nativity status. In the U.S., Asian immigrants have higher initial test scores than their White counterparts with comparable levels of education, regardless of their mother's skill, with the score gap being especially large among high skilled Asian immigrants. The scores for the children of low skilled immigrants grow at the same pace as those of Whites whose mothers have comparable levels of education. Conversely, the scores of the children of high skilled immigrants grow at a slower pace than their White counterparts. By age 9, the children of high skilled Asian immigrants no longer have an advantage over their White peers. In Australia, both groups of children of Asian immigrants have lower initial scores than their White counterparts, but a much more rapid growth rate. As a result, the scores of both groups catch up to those of their native-born peers.

Figures 1 and 2 go here.

The fact that the academic disadvantage of Asian immigrants in Australia disappears over time and the academic advantage of high skilled immigrants in the U.S. wanes over time suggest that immigrants socioeconomic incorporation depends on the context of reception, with more favorable contexts producing more rapid socioeconomic incorporation into the host society and better outcomes for children .

Future Steps

       We are in the process of documenting variations in the educational trajectories of the children of Asian immigrant and native-born White mothers. We will complete this task by the end of September. We are also in the process of constructing the scales measuring the parenting behavior of Asian immigrants and native-born Whites in the three countries. We will complete this task by mid-October. We will also assess whether differences in parenting practices give rise to the educational disparities between the children of Asian immigrant and native-born White mothers. We plan to complete this task by late-October. Once completed, we plan to revise the draft and send it out for publication in mid-November.

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TABLE 1.

Distribution of schooling by mother's region of birth, Australia and the U.S.

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		by Mother's Education					
Mother's Region of Birth	% Distribution	LT HS	HS	Some College	BA or more	Total	N
A. United States							
Native-born White	97	6	29	35	31	100	7,538
Foreign-born Asian	3	11	22	23	44	100	544
Total	100	6	28	34	31	100	8,082
B. Australia							
Native-born White	91	52	13	13	22	100	3,469
Foreign-born Asian	9	36	10	18	36	100	295
Total	100	50	13	13	23	100	3,764

Source: ECLS-K and LSAC-K

Notes: Sample restricted to children of Asian immigrants and native-born Whites. Weighted percentages and unweighted Ns.

TABLE 2.

SOCIODEMOGRAPHIC DIFFERENCES
BY MOTHER'S REGION OF BIRTH AND SKILL LEVEL, AUSTRALIA AND THE U.S.

	Australia				United States			
	Native-born White		Foreign-born Asian		Native-born White		Foreign-born Asian	
Column %	Low	High	Low	High	Low	High	Low	High
Preschool attendance								
Did not attend	60	59	54	45	25	11	36	22
Attended	40	41	46	55	75	89	64	78
Total	100	100	100	100	100	100	100	100
Child's birthweight								
≥2500g	92	94	92	93	94	95	91	96
<2500 g	7	6	5	7	6	5	9	4
Missing	1	0	3	0	0	0	0	0
Total	100	100	100	100	100	100	100	100
Parent's marital status								
Unmarried	32	13	18	9	30	10	22	6
Married	68	87	82	91	70	90	78	94
Total	100	100	100	100	100	100	100	100
Mother's age at birth								
Mean	29	32	32	33	27	31	28	32
Language spoken at home								
Not English	21	12	78	72	1	1	50	40
English	79	88	22	28	99	99	50	60
Total	100	100	100	100	100	100	100	100
Income								
Not Poor	81	94	71	89	84	98	80	96
Poor	19	6	29	11	16	2	20	4
Total	100	100	100	100	100	100	100	100
Hypergamy								
Fath has lower or same	76	-	65	-	70	-	55	-
Father has higher	24	-	35	-	30	-	45	-
Total	100	-	100	-	100	-	100	-

Notes:

ECLS-K and LSAC-K. Weighted percentages and unweighted Ns.

Poverty is defined half of median income.

TABLE 3.

**VERBAL TEST SCORES
BY MOTHER'S REGION OF BIRTH AND SKILL**

	Native-born White		Foreign-born Asian	
	Low	High	Low	High
A. United States				
5	35	41	35	45
6	46	53	48	59
7	78	90	78	96
9	130	146	123	142
B. Australia				
4	64	67	61	63
6	74	76	72	74
8	78	80	77	80

Notes: Weighted percentages and unweighted Ns.

TABLE 4. Growth Curve Models Predicting Verbal Test Scores (Reading IRT Scores), United States

	Model 1		Model 2		Model 3		Model 4	
	β	β/se	β	β/se	β	β/se	β	β/se
Mother's region of birth and skill (Native-born White, Low skilled)								
Native-born White, High skilled	4.56	12.71	4.22	11.65	3.31	8.10	3.34	8.16
Foreign-born Asian, Low skilled	0.26	0.28	0.57	0.62	0.21	0.22	1.96	1.84
Foreign-born Asian, High skilled	13.10	12.84	13.02	12.79	12.07	11.69	13.57	11.98
Age	30.66	238.47	30.66	238.70	30.66	239.43	30.13	43.48
Age*Mother's region of birth and skill								
Age*Native-born White, High skilled	3.79	16.75	3.79	16.76	3.78	16.79	3.78	16.79
Age*Foreign-born Asian, Low skilled	-0.51	-0.94	-0.52	-0.96	-0.51	-0.93	-0.09	-0.14
Age*Foreign-born Asian, High skilled	1.92	3.06	1.93	3.09	1.93	3.09	2.21	3.20
Preschool attendance (Did not attend)								
Attended			2.45	6.41	2.44	6.43	2.46	6.49
Child's gender (male)								
Girl			1.81	5.97	1.89	6.30	1.89	6.30
Child's birthweight (≥ 2500g)								
<2500 g			-1.68	-2.60	-1.64	-2.56	-1.64	-2.56
Language spoken at home (Not English)								
English							3.53	3.13
Age*English							0.54	0.79
Household income (≥ U$20480)								
Poor: < U$ 20,480 per year					-3.33	-6.38	-3.32	-6.36
Mother's age at birth								
Mother's age at birth					0.12	4.00	0.12	3.97
Parent's marital status (Unmarried)								
Married					2.00	4.90	1.98	4.87
Father has high levels of education (Does not)								
Father has high levels of education					1.20	2.98	1.27	3.16
Intercept	25.70	126.61	23.04	59.36	18.44	20.27	14.93	10.34
Random-effects	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
var(age)	27.92	1.07	27.72	1.07	27.01	1.06	27.02	25.02
var(_cons)	36.28	2.02	35.09	1.99	32.66	1.93	32.65	29.08
cov(age,_cons)	31.83	0.74	31.19	0.73	29.70	0.72	29.70	28.29
var(Residual)	245.06	2.31	245.32	2.32	246.33	2.33	246.33	241.80

TABLE 5. Growth Curve Models Predicting Verbal Test Scores (PPVT), Australia

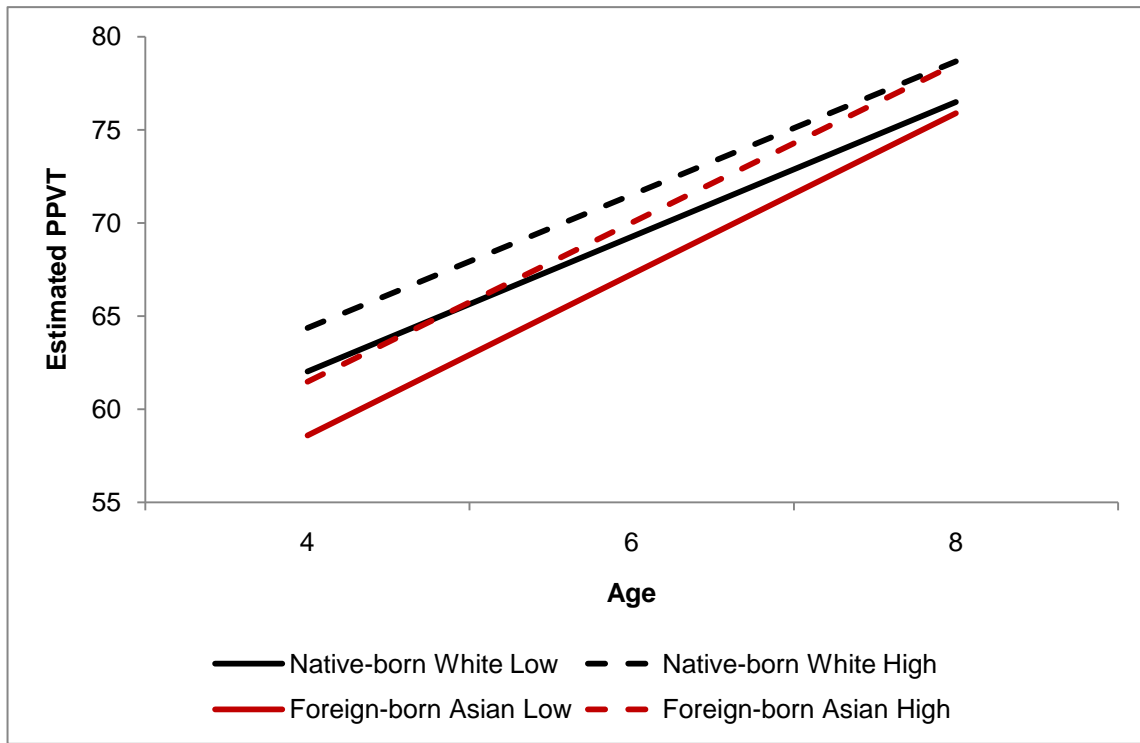|	Model 1		Model 2		Model 3		Model 4	
	β	β/se	β	β/se	β	β/se	β	β/se
Mother's region of birth and skill (Native-born White, Low skilled)								
Native-born White, High skilled	2.41	11.31	2.39	11.23	2.38	10.68	2.33	10.46
Foreign-born Asian, Low skilled	-3.95	-8.72	-3.94	-8.70	-4.15	-9.17	-3.43	-7.15
Foreign-born Asian, High skilled	-1.17	-2.24	-1.20	-2.30	-1.23	-2.34	-0.55	-1.00
Age	6.83	108.64	6.83	108.62	6.82	108.51	7.23	55.63
Age*Mother's region of birth and skill								
Age*Native-born White, High skilled	-0.12	-0.99	-0.12	-0.98	-0.11	-0.92	-0.07	-0.58
Age*Foreign-born Asian, Low skilled	1.69	6.50	1.70	6.51	1.69	6.50	1.42	5.23
Age*Foreign-born Asian, High skilled	1.54	5.19	1.55	5.20	1.55	5.21	1.30	4.28
Preschool attendance (Did not attend)								
Attended			0.15	1.07	0.18	1.33	0.19	1.37
Child's gender (male)								
Girl			-0.09	-0.67	-0.09	-0.68	-0.08	-0.64
Child's birthweight (≥ 2500g)								
<2500 g			-0.19	-2.49	-0.18	-2.32	-0.18	-2.31
Language spoken at home (Not English)								
English							1.28	4.60
Age*English							-0.50	-3.63
Household income (≥ 500 AUD per week)								
Poor: <500 AUD per week					-0.55	-2.57	-0.34	-1.50
Mother's age at birth								
Mother's age at birth					0.06	4.63	0.06	4.63
Parent's marital status (Unmarried)								
Married					0.12	0.66	-0.15	-0.73
Father has high levels of education (Does not)								
Father has high levels of education					0.91	4.93	0.87	4.67
Intercept	64.96	585.82	64.98	468.28	62.90	145.03	62.02	131.61
Random-effects	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
var(age)	0.40	0.08	0.40	0.08	0.41	0.08	0.39	0.08
var(_cons)	15.12	0.71	15.12	0.71	14.76	0.70	14.63	0.70
cov(age,_cons)	-2.46	0.29	-2.47	0.29	-2.45	0.29	-2.40	0.28
var(Residual)	16.39	0.29	16.39	0.29	16.38	0.29	16.37	0.29

FIGURE 1. ESTIMATED READING IRT SCORES

BY MOTHER'S REGION OF BIRTH AND SKILL, UNITED STATES
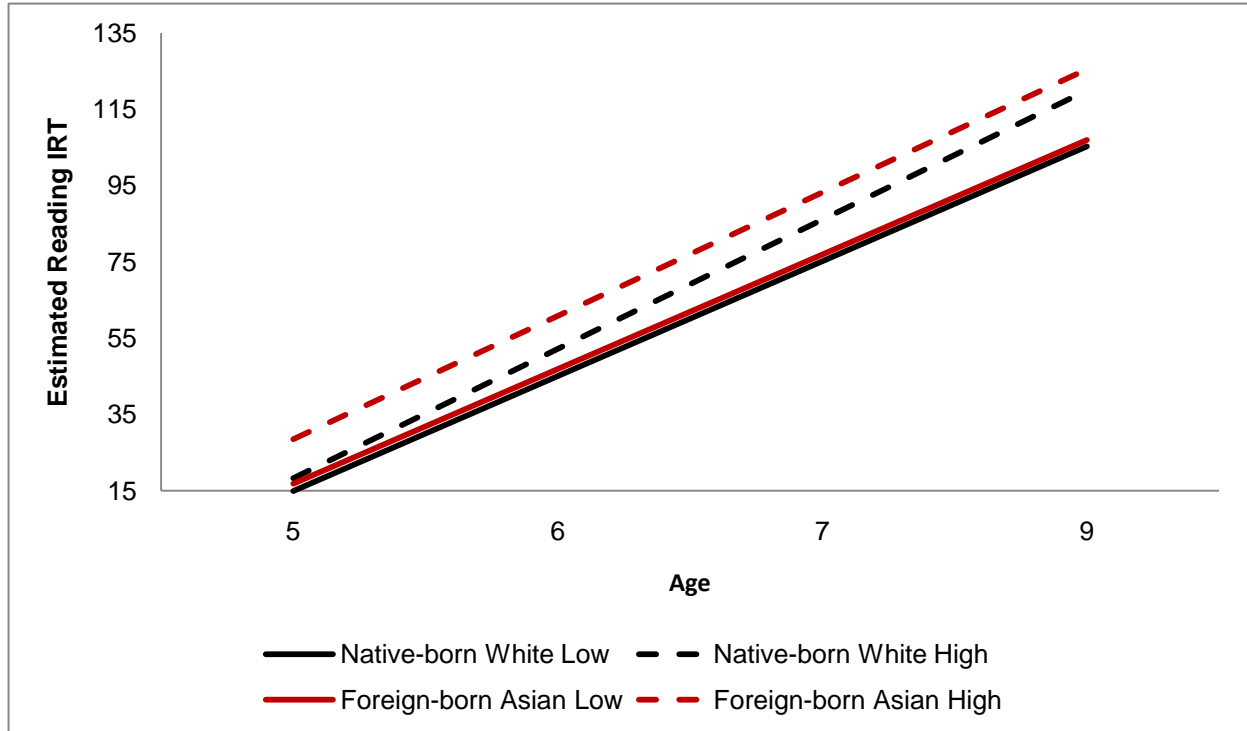
Notes:
Scores are predicted for children who did attend preschool; weighed more than 2500 g at birth; are girls, are not poor, and were born to unmarried mothers.

FIGURE 2. ESTIMATED PPVT

BY MOTHER'S REGION OF BIRTH AND SKILL, AUSTRALIA

Notes:
Scores are predicted for children who did attend preschool; weighed more than 2500 g at birth; are girls, are not poor, and were born to unmarried mothers.