

**Assimilation or Isolation?  
The Case of Mainland Chinese Immigrant Students in Hong Kong**

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## Abstract

### **Assimilation or Isolation? The Case of Mainland Chinese Immigrant Students in Hong Kong**

Despite their disadvantageous family backgrounds, Mainland Chinese immigrant students outperform native Hong Kong students in all academic subjects except the English language, from Form 1 to 3 (grades 7-9). Over time, Mainland students attain achievement growth faster than native students in Form 2 and 3 in most subjects. Even though Mainland students perform poorly in the English language compared to their native peers in every grade, they pick up speed over time and narrow the nativity gap in Form 3. Mainland students' high performance cannot be explained by their low socioeconomic backgrounds or the low-achieving schools they attend. Many Mainland students are overaged for their grade but they perform just as well as other younger students. Also, Chinese-medium schools, especially medium- or low-ability schools, are more effective in promoting high achievement in Mainland students than are English-medium or high-ability schools. The implications of these Hong Kong results for international studies on immigrant children's academic assimilation are discussed.

## **Assimilation or Isolation? The Case of Mainland Chinese Immigrant Students in Hong Kong**

Human migration is as old as human history itself, but yet today's globalization and the integration of world markets have taken human migration to new heights. The number of migrants moving within and between national borders to seek better opportunities reached some 181 million (Kwong, 2007). During the recent ten years between 1996 and 2006, foreign-born population in the world increased by half of a million (Migration Policy Institute, 2007).

No other country is more visible than China who, being the most populated country in the world, has contributed significantly to this fluid human movement. Since the economic reform and political movements of the later 1970s, more than 18 million Chinese have left China. Today, one out of six people in the world is from China (Kwong, 2007). Understanding Chinese immigrants' integration into new host societies has become an increasingly important subject for immigration research. Previous studies of Mainland Chinese immigrants in Hong Kong have painted a grim picture, showing that many were out of work or experienced declining wages (Liu and Lam, 2002a). Others describe segregation and isolation of Mainland Chinese immigrants in "concentrated poverty" (Chui, et al., 2005). The lack of occupational advancement and deep poverty would lead to the downward assimilation of immigrant groups who would be trapped in poor ethnic enclaves where children lack successful role models.

This paper studies child-immigrants from Mainland China to Hong Kong. Education has been shown to be a universal means for upward mobility (Sorokin, 1927), thus the Mainland Chinese immigrant children's future life chances in Hong Kong

depend on their performance in Hong Kong's schools. Also, education affects an individual's norms, values, and outlooks. Successful educational assimilation eventually helps Mainland Chinese immigrants to fully participate and integrate into Hong Kong society. In contrast, unsuccessful assimilation of the next generation of immigrants would create a segregated and isolated underclass.

### **A Brief History**

A former British colony, Hong Kong has had a continuous population inflow from the Mainland: refugees in the 1950s and 1960s, "new immigrants" in the 1970s and 1980s, and now the "new arrivals" since Hong Kong's reunification with China in 1997 (Siu, 1999). In 1974, Hong Kong issued the "reach-base" policy that temporarily curbed Chinese immigration from the mainland. The policy recognized the rights to work of all illegal immigrants who crossed the border prior to November 1974. Those who successfully reached the urban areas of Hong Kong Island and the Kowloon peninsula were considered to be safe by "reaching base" (Lam & Liu, 1998). After then, any illegal immigrants were arrested and repatriated. Those who touched base were eligible for permanent status in Hong Kong after 7 years of residence. This effect of the reach-base policy was short-lived, however. Unilaterally closing the border did not stop illegal immigrants. After China lifted the restriction of internal mobility in accordance with the 1979 economic reform policy, border control of the mainland side weakened and there were surging numbers of illegal immigrants. Between 1978 and 1980, the inflow of Chinese immigrants, about half legal and half illegal, was estimated to be more than

400,000 (Siu, 1999). Finally, with China's consent in 1983, Hong Kong has been admitting 150 legal immigrants daily from China since then.

While mainland immigrants have increased in number, they also have changed in age structure and in their relationship to Hong Kong residents. Immigration policy has favored family reunification since 1993, admitting more children and spouses from the Mainland. Between 1987 and 1997, the majority (47.3%) of over 390,000 immigrants came as dependent children (Siu, 1999). This large influx of children from China has made Hong Kong stand out among 40 countries in the Third International Study of Science and Math Achievement (TIMSS) as having the largest percentage (18%) of foreign-born children in fourth grade. The percentages of immigrant children would be considered even larger if we were to include children born in Hong Kong of Mainland parents, i.e. those in the "second-generation." In the PISA survey of 2003, the percentages of foreign-born children (with foreign-born parents) are 20.4 percent and native born children with two foreign-born parents are 22.9 percent. They both make up a total of 43.3% of the 15-year old student sample (Ho et al., 2003).

Because education is the most important means of upward social mobility, immigrant children's educational success or failure will contribute to their future socioeconomic well-being. This study examines immigrant children's performance in Hong Kong's lower secondary school (equivalent to 7<sup>th</sup>-9<sup>th</sup> grades in the U.S.) in various academic subjects. We build on previous research that typically examines the nativity gap using cross-sectional data or data on generations (parents and children), to explore how the nativity gap changes over time. We show that the conclusion of educational

assimilation can be quite different between cross-sectional and longitudinal analyses, and caution interpretations that rely solely on results reported at one point in time.

### **Immigrant Assimilation: Theoretical Considerations**

Immigrant assimilation has occupied social scientists for decades. Economists tend to focus on immigrants' labor market assimilation, defining assimilation as the process of earnings convergence between arrival cohorts of immigrants and natives (Borjas 1994, 1995). To political scientists, immigrant assimilation means political socialization and incorporation of immigrants (García Bedolla, 2005). Sociologists have focused on marital and spatial assimilation, the processes in which immigrants come to marry or live side by side with natives (Alba & Logan, 1993). Regardless of disciplines, all social scientists are interested in immigrants' educational assimilation – the process of convergence in educational attainment or achievement between immigrants and natives. In the U.S., most early research on educational attainment concentrates on adult immigrants. As the number of immigrant children increases, researchers have turned to examine educational assimilation of children from immigrant families (Rumbaut, 1996).

In Hong Kong, labor market assimilation characterizes most work on immigrant assimilation, which documents the widening earnings gaps between Hong Kong natives and mainland Chinese immigrants (Lam & Liu, 2002a, 2002b). We know less about Hong Kong immigrants' assimilation in the political, social, and educational domains. In education, there are some reasons to believe that children of new immigrants to Hong Kong are at risk for educational failure. Parents of children who arrived in Hong Kong from the mainland since 1991 are over-represented in the poorest quarter of the income

distribution (Post, 2004). The earnings gap between immigrant and native males widened from 11.3 percent to 25.5 percent between 1981 and 1991, and this worsening economic situation for immigrants was due largely to their low level of human capital (Lam & Liu, 2002a). Much research in sociology of education finds that family income is positively associated with academic achievement. Therefore, different family income alone, we would expect that mainland Chinese students in Hong Kong have lower performance than native Hong Kong students.

However, family income is not the only factor determining students' academic achievement, and it is even less important for immigrant children than for native children. Quantitative research in the U.S. has found foreign-born students to outperform native students in achievement tests despite their low socioeconomic backgrounds (Schwartz and Stiefel, 2005; Venez, 1996; Kao & Tienda, 1995; Hao & Bonstead-Bruns, 1998; Rong & Grant, 1992). Explanations for the immigrant achievement advantage vary. The widely accepted views include immigrant optimism (Kao & Tienda, 1995), social capital in ethnic-immigrant communities (Zhou & Bankston, 1998), and bilingualism (Portes & Hao, 1998). For those who are ethnically different from the dominant group, discrimination may also play a role, although there is no agreement on how discrimination works as a mediator. An older view suggests that immigrants' dual frame of reference helps them psychologically to overcome discrimination (Ogbu, 1991), but a more recent view contends that discrimination generates immigrant-pessimism towards the future, prompting immigrant children to work harder in school (Louie, 2004).

Portes and Zhou (1992, 1993), through their study of today's second generation in the U.S., suggested an alternative "segmented assimilation model" which posits that the

patterns of assimilation vary by immigrant groups. Different groups assimilate into different sectors of American society. Some groups follow a linear assimilation process and eventually escape poverty and achieve socioeconomic advancement, just as European immigrants did in the past. Other groups may experience deterioration in socioeconomic status over the generations, and become susceptible to long-term poverty and discrimination. Still others may achieve socioeconomic mobility that matches middle-class White Americans, but with preservation of culture from their place of origin. Three discrete paths of becoming American depend on the "modes of incorporation," which is a function of policies and prejudices existing in the host country. The relevant parameters of the favorable or unfavorable incorporation include skin color, location, and occupational opportunities. Overall, the segmented assimilation perspective places the assimilation process in the context of a larger society consisting of segregated and unequal segments. There is therefore no single path every immigrant group follows into a "mainstream."

Reconciling this segmented assimilation theory and other hypotheses, Richard Alba and Victor Nee (2003) recently proposed a "new immigration theory" that revitalized classical assimilation of the Chicago School through new historical evidence. They contended that assimilation to the mainstream society remains a central social process in the adaptation of immigrants and their descendants, past and present. In the U.S., immigrants were always discriminated against and the economy did not always work to their advantage, but they managed to assimilate by way of cumulative and purposive rational actions in pursuit of some goals, such as getting good education and a good job. The force of assimilation for immigrant children is so strong that even



immigrant youth who were widely perceived as problem students with high rates of dropout and delinquency, experienced upgrading in their educational attainment.

### **Implications for Hong Kong**

Which path of educational assimilation do Mainland Chinese immigrant children follow: upward mobility, downward assimilation, or muscle-up assimilation? As mentioned above (Post, 2004; Lam & Liu, 2002a), mainland Chinese adult immigrants have lower human and financial capital. The low socioeconomic status of mainland Chinese children likely depresses their school achievement.

However, there are many factors that can compensate for Mainland children's socioeconomic disadvantage. Culturally, differences between mainland Chinese and native Hong Kong students are minor. The majority of the mainland Chinese and native Hong Kong students come from the Han ethnic group. Hong Kong popular culture has spread across the border to many parts of mainland China, especially the Guangdong province which has sent the most immigrants to Hong Kong. Many immigrants are familiar with the clothing styles, pop music, movies, food, and mannerisms in Hong Kong prior to migration. Also, students from Guangdong province speak Cantonese – the dialect spoken in Hong Kong. Without ethnic, language, and other cultural differences, mainland Chinese immigrant children in Hong Kong face fewer problems of adjustment to the host society, compared to immigrant children worldwide.

Several other factors also compensate for mainland Chinese immigrant children's socioeconomic disadvantage. First, immigrant parents tend to hold optimism and high expectations for their children (Kao & Tienda, 1995). Immigrant children are well aware

of their parents' sacrifices and are motivated to work hard for future success. Second, many mainland immigrants have relatives in Hong Kong who can provide assistance. This form of social capital among kins is extremely useful to the newly arrived family who need help finding schools for the children.

Third, the political context of reception since the 1990s has been quite favorable to the Mainland immigrants. Hong Kong government actively helps immigrant children from the Mainland to adjust to local schools several years after the signing of the Sino-British agreement that authorized Hong Kong's return to Mainland China. The Education and Manpower Bureau – the administrative branch of the government that manages all Hong Kong schools – implemented a number of policies in support of integrating mainland students. These policies include the School-Based Support Scheme Grant, Induction Programme, Full-time Initiation Programme, and placement services.<sup>1</sup> They provide funding for supplementary lessons in schools, tailoring curriculum, purchase of teaching aids and resource materials, organizing orientation programs, guidance programs, and extra-curricular activities. They also provide services to induct Mainland immigrant children so that they learn to be familiar with local community and culture. Because English instruction in the mainland lags behind Hong Kong that has a history of English medium schools, government funding is provided to run English remedial classes. Other remedial classes are for written Chinese because the Mainland uses simplified characters while Hongkongers use traditional characters. Finally, the education initiatives also aim at improving mainland children's study skills, to foster

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<sup>1</sup> Information in this subsection comes primarily from the official website of the Bureau. For details, see <http://www.edb.gov.hk>.

personal development and social adjustment, and to give newly arrived children the exposure to Hong Kong classroom situations.

In addition, the Hong Kong school system is flexible to Mainland Chinese students in two aspects. The first is the medium of instruction. As a colonial legacy, a small portion of schools in Hong Kong uses the English medium. But the majority of schools adopt the Chinese language. Mainland Chinese immigrant students generally do not have a language problem in Chinese-medium schools.

The second aspect of flexibility is the loose definition of age-grade relation. Overage for the grade is not only allowed but sometimes even encouraged for immigrant children. One major reason for Mainland students' overage is that the official school entry age in Mainland China is 7 but it is 6 in Hong Kong (UNESCO Institute for Statistics, 2003). Mainland students are typically one year older than their native counterparts for the same grade. Another reason is that Mainland immigrant children often repeat school grades *at the time* when they enter Hong Kong schools (Chan, 1998). The highly centralized Hong Kong school system prescribes a rigid system of promotion and placement supported by a series of high-stake examinations. To enter a school, an immigrant student has to pass an admissions test designed and administered by that school. Prestigious schools, including all the English-medium schools, can be more selective than other schools. Because of a lower level English curriculum in Mainland China, new Mainland immigrant students often perform poorly in the English language tests. For that reason alone, schools may recommend placing them in a lower grade.<sup>2</sup> Also, the recent education reform pushed for accountability measures, of which student achievement is a major issue. By placing immigrant children in a lower grade, a high-

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<sup>2</sup> Personal communication with a principal of a secondary school in Sheung Shui, the New Territories.

achieving school avoids the risk of poorer achievement. Generally immigrant parents would not mind because their children are more likely to enter a high-achieving school. Indeed, interviews by the first author found that many immigrant parents believe that repeating a grade can help immigrant children to catch up and succeed in the new school system.<sup>3</sup> Therefore, it is important to bear in mind that Mainland students' overage for their grade is largely a product of the mismatch of the home and host-country educational system, and has little to do with grade retention that signifies academic failure. Mainland students' overage can better be characterized as "redshirting" in the school entry literature (Graue & DiPerna, 2000).

The fact that immigrant students are asked to repeat one or more grades has generated public concern in Hong Kong (Chan, 1998). Some feared that overage is a negative label adversely affecting immigrant children's self-esteem and motivation to achieve. However, repeating a grade can help immigrant children to learn what they have missed. A year of easy school work can give immigrant children time to adjust socially in school. Karl Alexander and his colleagues (2003) found that being pulled back a grade helps students to perform better academically, especially in their repeated year. Thus, it is an empirical question whether Mainland immigrants' grade repetition has any negative consequences.

Immigrant children's learning may depend on the type of schools they attend. In Hong Kong, schools are highly segregated according to students' achievement. At the end of elementary school, each student is assessed under the territory-wide evaluation system administered by the Education Department. Students' scores are compiled as

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<sup>3</sup> Focus group interview with lower secondary school students in a school in Sheung Shui, the New Territories.

composite achievement scores known as the Academic Ability Index (AAI). This index classifies students into five “bands”, each of which represents one-fifth of the AAI distribution. The top 20 percent are categorized as Band-1 students, and the bottom 20 percent are Band-5 students. Furthermore, according to the medium-of-instruction policy implemented by the HKSAR Government since 1998, it has been stipulated that the top 40 percent of students in the AAI are identified as “EMI-capable” - students capable of using English as a medium of instruction. Any secondary schools that enroll 85 per cent or more EMI-capable students in their first-grade intakes are qualified to be English-medium schools. As a result, most English-medium schools are Band-1 schools. Virtually all Band-3 to Band-5 schools are required to use Chinese as the medium of instruction.

Our research questions are as follows. How do mainland Chinese immigrant students perform in Hong Kong schools, compared with their native Hong Kong counterparts? Does this nativity gap change over time as students progress through the secondary years? No Hong Kong research today has examined immigrant children’s academic achievement in relation to the schools they attend. Thus we ask these questions: Are Mainland immigrant students distributed equally across different types of schools? Does their performance vary by the type of schools they attend?

Most previous research on immigrant children’s educational assimilation relied on cross-sectional survey data that provide three groups of students for comparison: the first, second, and third-plus generations. The first generation refers to foreign-born children with foreign-born parents. The second generation refers to native-born children who have at least one foot on born parents. The third-plus generation refers to native-born children

whose parents are both native-born. These three generational groups are useful in understanding educational inequality by immigrant backgrounds, but it is problematic to make statements about immigrant assimilation because these are artificial generations. Each generation represents a different arrival cohort who faced a unique context of reception in the host country. Each artificial generation is a distinct group, and the behaviors of one artificial generation cannot be used to predict the behaviors of another. Thus, one cannot draw conclusive statements about immigrants' assimilation using cross-sectional data. This paper examines immigrant assimilation of a cohort of students entering secondary school in 1999. Following the same individuals over time for 3 years, we are better able to make statements about educational assimilation of Mainland Chinese immigrant students.

## **Data**

We use the medium of instruction longitudinal survey (MOILS) for our analysis. This survey was commissioned by the Education Department of the Hong Kong Special Administrative Region (HKSAR) to evaluate and compare students in schools adopting either Chinese or English as medium of instruction. A primary objective is to trace the academic and personal development of Hong Kong students in each type of schools during the lower secondary school years. In Hong Kong, grades in secondary school begin in Form 1 and continue until Form 7. Starting in the academic year of 1999-2000,

MOILS tracked two cohorts of students from secondary schools that serve primarily Chinese students.<sup>4</sup>

A total of 100 secondary schools<sup>5</sup> were selected by stratified random sampling based on two criteria: (1) the medium of instruction used in schools (English medium and Chinese medium), and (2) The achievement level of the student intake (high, medium, low), indicated by students' "academic ability index." This index is measured by cumulative tests results, school grades, or other criteria, and is required of every primary school graduate for the purpose of allocating secondary school places.

All Form 1 (Secondary 1) and Form 2 (Secondary 2) students from each of these 100 schools were included in the base year sample in 1999-2000. Each student was tracked in 2000-2001 and 2001-2002, until they reached the end of Form 3 (9<sup>th</sup> grade). Thus one cohort of students was surveyed three times and the other was surveyed twice. To maximize information, we use the former cohort who began secondary school in the academic year of 1999-2000 and were Form 1 students in the first wave of data collection. They consist of 18,471 students in 1999-2000. The attrition rate was low: 4 percent in the first follow-up and about 3 percent in the second follow-up.

In the second semester of each survey year, sampled students were assessed on their achievement in five school subjects: Chinese, English, mathematics, science, and social studies. The survey instruments include not only the student questionnaire, but also teacher, administrator, and parent questionnaires. For the purpose of our study, we utilize only the student and parent questionnaires.

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<sup>4</sup> International schools or other non-Chinese schools are not in the sampling frame.

<sup>5</sup> The population is just over 400 schools.

Parent survey was administered only once in 2000. The non-response rate was 15 percent. Because immigrant status is our major focus, and this information comes from the parent survey, we decide to eliminate cases from our analysis. We further drop 116 cases with unknown place of birth of the student and another 226 students who were born outside Hong Kong or Mainland China. After dropping these cases, we have a sample of 14,804 for the first two waves, and 14,336 for all three waves of the longitudinal sample.

## **Variables**

### *Dependent Variable*

MOILS designed curriculum-based achievement tests in five subjects: Chinese, English, mathematics, science, and social studies. In lower secondary school (Form 1-3) all students follow a common curriculum, which means that given a certain grade, every lower secondary student has the same opportunity to learn.<sup>6</sup> This study examines three subjects that are required for high school graduation: Chinese, English, and mathematics. The Chinese language test consists of instruments testing students' skills in listening, language form and function (e.g., vocabulary, syntax and lexical skill), reading comprehension, and writing. The English language tests aim at testing students' skills in listening, language form and function (e.g., vocabulary, syntax and grammar), reading comprehension and writing. The mathematics test consists of multiple-choice items testing various computations skills.

In order to improve the measurement quality of the achievement tests, MOILS applied the Rasch's dichotomous model to scale the multiple choice items to generate

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<sup>6</sup> Hong Kong students are not tracked until Form IV (tenth grade) into various combinations of Arts, Science, and Commerce streams.



adjusted total scores for each achievement test (Wright and Masters, 1982; Andrich, 1988).<sup>7</sup> All achievement test scores we analyze here are Rasch-adjusted scores that have a standard deviation close to one.

### *Independent Variables*

All of our independent variables come from the Parent Survey. The major independent variable is the dichotomous variable representing students' place of birth in Mainland China. Those *born in Mainland China* are compared to the Hong Kong natives.

Students' age is constructed from their date of birth. Children are supposed to enter Primary 1 (1<sup>st</sup> grade) when they turn six by December.<sup>8</sup> Thus, we calculate students' age on December 31, 1999, and constructed dummy variables representing two age categories: 13-14, and 15-19. The reference group includes the modal age group of 12 who make up about 72 percent of the total student population in the 1<sup>st</sup> year of secondary school. A small number (15) of students are 10 or 11 years old; they are grouped with the 12<sup>th</sup> year olds as the reference category.

Students' *socioeconomic (SES) background* is an index constructed using father's education, mother's education, and family income, all of which reported by the parents in the second wave. The original *parent's education* has 5 categories: no schooling or kindergarten, primary school, junior secondary school, senior secondary school (including matriculation), and tertiary education. The original *family income* variable is a categorical variable. The SES variable is a standardized variable with a mean around 0 and a standard deviation of 1.

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<sup>7</sup> These Rasch-adjusted total scores are generated by the PARSCALE software.

<sup>8</sup> According to the Education Bureau's website: "All children in Hong Kong who have attained the age of 5 years 8 months or older (as at 1st September of the year of school entry) are eligible to participate in this admission scheme provided that they have not been allocated a Primary One place previously."

*Parents' educational expectations* for their children is a nominal variable that has 6 values: never thought about it, finish junior secondary school, finish upper secondary school, finish matriculation courses beyond secondary school, Associate degree or equivalent, and university degree or above.

Three school variables describe the type of schools students attend. One measures *school-mean SES*. It is constructed by averaging individual students' SES within school. The other is a set of four dummy variables indicating both the medium of instruction and student ability. These dummy variables are (a) *English-medium* school (reference), (b) *high-ability-Chinese-medium* school, (c) *medium-ability-Chinese-medium* school, and (d) *low-ability-Chinese-medium* school.

### **Plan of Analysis**

We perform four types of statistical analysis. First, we use summary statistics to give a profile of the Mainland Chinese immigrant students and compare their profile with that of Hong Kong native students. Second, we explore if there is a nativity gap in test scores in the first year of secondary school, i.e., in Form 1. This is a cross-sectional, multivariate analysis on the achievement of three subjects: Chinese, English, and mathematics. Third, we explore if a nativity gap exists for the achievement growth between Form 1 and Form 2, and between Form 2 and Form 3. We employ here the method of repeated cross-sectional analysis of test scores of the current year, with control of previous test scores. Fourth, we examine if any individual, family, and school factors account for the nativity gaps where they exist. Because students are nested within schools, an ordinary least square model will violate the assumption of independence for

students who attend the same school. To take into account intra-correlation within schools, we use the hierarchical linear modeling (HLM) for our analysis.

## **Results**

### *Profile of Mainland Chinese Immigrant Students*

Our data show that Mainland Chinese immigrant students differ from native Hong Kong students in many aspects. Table 1 shows Form 1 students' demographic, socioeconomic, and school characteristics. As expected, Mainland students are more likely to be older for the grade. In our sample of Form 1 students, over 82% of Hongkongers are 10-12 years old, whereas only 21% of Mainlanders are. Note that there are few (less than 1%) students aged 10 and 11, so the category of 10-12 years old really reflects predominantly 12 years olds. Less than 1% of Hong Kong students aged 15-19, but 26% of Mainland students are in that age group. The modal age group for the Mainland students is 13-14. On average, Mainland students are about 1.5 years older than native Hong Kong students.<sup>9</sup>

(insert Table 1 about here)

Compared to native Hong Kong students, Mainland students are socioeconomically disadvantaged. Their family income is lower and their parents have less education. Their SES is about 45% of a standard deviation below the SES of native Hong Kong students. However, despite the low SES of Mainland students, their parents' expectations of their education are about the same as the expectations of native Hong Kong parents. This is evidence of immigrant parents' optimism for their children's future.

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<sup>9</sup> The average age of Hong Kong Form 1 students is 12.19, and the average age of Mainland students is 13.69.

There are also nativity differences in the distribution of different types of schools. Mainland students' schools have lower average SES than do native students' schools. Whereas the distribution of Mainland and native Hong Kong students is similar in English-medium schools, Mainland students are 10% more likely to attend a low-ability Chinese-medium school than are native students.

### *The Achievement Gap by Nativity*

The low SES backgrounds of the Mainland students do not predict their high academic achievement, as shown in Table 2. Mainland students outperform native students in every subject except the English language for almost every survey year. Because these test scores have a standard deviation very close to one, the differences in means can also be read as the differences in terms of a standard deviation. In Form 1, the largest nativity-achievement gap is in the Chinese language, followed by math, science, and social studies. However, the negative achievement gap is large in English. Mainland students lag behind native students in more than 30% of a standard deviation of the English test scores.

(insert Table 2 about here)

Mainland students' achievement advantages in the Chinese language, science and social studies persist in Form 2 and 3. Particularly, their advantages in science and social studies appear to have taken off. The growth in the science-test-score gap in favor of the Mainland students is particularly large in Form 2, which is almost a quarter of a standard deviation. By the end of the junior secondary school, in Form 3, Mainland students outperform native students in social studies, science, and the Chinese language by 11%, 3% and 10% of a standard deviation, respectively.

In addition, Mainland students' disadvantage in English appears to decline steadily over time. By the end of the junior secondary school, the English-achievement-gap drops to around 22% of a standard deviation.

Descriptive statistics does not allow us to make generalizations beyond the characteristics of our sample to the population of secondary school students in Hong Kong, so we next turn to our HLM analysis that tests the hypothesis of a positive or negative achievement gap by nativity for each academic subject.

Table 3 shows the 15 HLM models for each school subject in Form 1, 2, and 3. The students' place of birth in Hong Kong or Mainland China is the only variable in Form 1. The regression coefficients of students born in Mainland China confirm that in Form 1, Mainland students outperform their native counterparts significantly in all subjects except English. Again, the size of the significant achievement gap is largest for Chinese and math than for science and social studies.

(insert Table 3 about here)

In the regressions predicting Form 2 test scores, the corresponding Form 1 test scores are included as a control. As such, the nativity coefficient is interpreted as the gap in achievement growth between Form 1 and 2. The nativity gap in achievement growth is positive for all subjects except English, and the gap is the largest for science. Mainland students' growth in English test scores does not catch up with the growth in English test scores of native students, resulting in a negative nativity gap averaging about 5% of a standard deviation. That said, the negative nativity gap in English is not as large as the 14% in Form 1.

What is remarkable is that by Form 3, the nativity gap in English turns positive, indicating higher growth rates in English test scores among Mainland students than those among native students. Although Mainland students have not overtaken native students in English in Form 3, the result suggests a trend of narrowing English test score gap. In fact, at the end of the junior secondary school, Mainland students continue to show significant advantage in the growth of test scores in Chinese, math, and social studies, although the advantage in the growth of test scores in science disappears.

#### *Explaining the Achievement Gap*

In the following three tables we examine if students' demographic characteristics, their SES, and the SES and type of schools they attend account for the achievement gap by nativity. Tables 4-6 shows that, in the face of other covariates, the nativity gap remains significantly positive in favor of Mainland students in the subjects of Chinese, math, science, and social studies, in all three lower-secondary grades. Comparing the nativity coefficient in Table 4-6 with the corresponding nativity coefficient in Table 3, we find that in most cases, a positive nativity is larger when other covariates are included in the model. This suggests that immigrant students' disadvantaged background or school characteristics mask their superior achievement.

(insert Table 4-6 here)

The exception is English achievement in Form 1 and Form 2. The demographic, SES, and school covariates account for some of Mainland students' poor achievement in Form 1 English and all of their poor English achievement in Form 2. We find but do not report here that simply controlling for students' age has an effect of eliminating Mainland students' disadvantage in English achievement. By Form 3, the nativity gap in English

achievement turns positive. Similar to other subjects in Form 3, this positive English achievement gap is larger when other factors are taken into account.

#### *Other Covariates*

All other covariates except students' age behave the way we expect. Girls do better than boys in the two languages but not in math and science. Nevertheless, girls appear to have caught up with boys in math and science in Form 3. Parental expectations are a significant predictor uniformly of any kind of achievement, explaining about 3-5% of a standard deviation. However, the positive SES-achievement relationship that has been well documented in previous literature is not consistently found here. This may be due to the highly segregated nature of Hong Kong schools. The degree of school segregation is reflected in the large between-school variances for every subject except English. Within-school variances are much smaller than between-school variances. As mentioned above, Hong Kong secondary schools are stratified by student achievement in public examinations. Because high achieving students also tend to come from high SES families, achievement-segregation highly correlates with SES-segregation. When different SES students are tracked in different schools, there leaves little within-school variances to be explained by SES.

In the absence of the school type variables in our models, School mean SES significantly predicts achievement scores. However, its effects are washed out when the school type variables are controlled. Students in English-medium schools do the best, on average, than Chinese-medium schools. And Chinese-medium schools are further stratified by students' ability level. The average level of students' ability in a school is strongly associated with average student achievement.

Overage for the grade does not consistently confer disadvantage in terms of student achievement. In many cases, the coefficient of overage (15-19) is not statistically significant, but it appears to be consistently negative for English achievement. As mentioned earlier, age alone completely account for Mainland immigrant students' disadvantage in Form 2 English.

#### *Interaction Between Nativity and School Type*

Next we explore how Mainland students perform in different types of schools stratified by students' ability and the medium of instruction. Table 7 shows the results on the interaction effects between nativity and school type. Whereas the main effect of nativity remains to be positively significant for all grades and all subjects except Form 1 English, almost all interaction effects bear a negative sign, and many are statistically significant. This suggests that compared to their native counterparts, Mainland students do not do well in "better" schools that use an English medium or of higher average student achievement. This result is surprising to us. Although Mainland students understandably have academic difficulties in English-medium schools, we do not expect them to have difficulties in high-ability Chinese-medium schools. Future studies need to look into these high-ability Chinese-medium schools to understand why a nativity gap exists in these schools, especially in Form 3, to the disadvantage of Mainland students.

(insert Table 7 about here)

#### *Interaction Between Nativity and Student's Age*

Because most Mainland students are older than native Hong Kong students, we are interested to know if older Mainland students perform better relative to their peers. The analyses that investigate the interaction between nativity and age are presented in



Table 8. The results suggest that Mainland students who are 15 or older do not differ from Mainland students who are aged 12 or younger, but Mainland students aged 13-14 do significantly better. In fact, Mainland students' overage explains why Mainland students outperform native Hong Kong students in every grade of math as well as in all subjects except science in Form 3. Put differently, Mainland students who are 1-2 years older than the modal age for the grade are the high achievers.

(insert Table 8 about here)

### **Summary and Conclusions**

We report in this study several findings on Mainland Chinese immigrant students' academic performance in Hong Kong's lower secondary schools, based on our analysis of longitudinal survey data in Hong Kong. First, we find that Mainland students in our sample are older than native Hong Kong students. They also occupy lower socioeconomic status and are more likely to attend low-ability Chinese medium-schools than their native counterparts. Despite their disadvantageous backgrounds, Mainland students outperform native Hong Kong students in all academic subjects except English, in all three grades from Form 1 to 3. Their advantage in Form 1 is largest in Chinese and math, averaging about 30% and 23% of a standard deviation, respectively. Second, Mainland students attain achievement growth in most subjects except English faster than native students in Form 2 and 3. Although Mainland students perform poorly in English compared to their native peers in every grade, they pick up speed over time and narrow the nativity gap in Form 3.

Third, Mainland students' high performance cannot be explained by their unconventional age, poor backgrounds, and low school quality. By contrast, when

comparing with native student with the same demographic, family, and school characteristics, Mainland students' performance becomes even stronger. The only exception is Mainland students' low English achievement that can be explained by their older-than-modal age. This result is consistent with the fact that children learn a foreign language better at a younger age. Over-aged immigrant children likely enter Hong Kong when they are older and have to repeat one or more grades. These immigrant children tend to have more difficulty in the English language than their native peers.

Fourth, we find Chinese-medium schools to be more effective than English medium schools to promote Mainland students' educational assimilation. However, we also find that the nativity gaps are higher in most school subjects in high-ability Chinese medium schools than in medium- or low-ability Chinese-medium schools, suggesting that high-ability schools tend to suppress Mainland immigrant students' achievement. These results suggest that keen competition, especially in a different language environment, is more detrimental to immigrant students than their own socioeconomic background. Further investigation needs to understand how different types of schools distribute learning opportunities differentially to immigrant and native students.

Our fifth finding concerns Mainland students' overage for their grade. The best Mainland performers are slightly older than the modal age of 12 in Form 1 (or 13 and 14 in Form 2 and 3, respectively). Research on "academic redshirting" in the U.S. (Graue & DiPerna, 2000) has found achievement benefits of children entering school at a later age. Mainland students who redshirt have one or two extra years to re-learn what they know, pick up new skills, learn the loop and become test smart, they are decidedly advantaged educationally compared to their same-grade peers, regardless of nativity.

These results from Hong Kong have important implications for international studies on immigrant children's academic assimilation. Educational researchers typically examine the overall GPA or one or two academic subjects and draw conclusions on immigrant children's school adjustment. This is problematic because, as we have seen, immigrant children's performance can be better or worse than natives' performance, depending on the academic subject in question. Generally, subjects that require proficiency in a second language suppress immigrant children's achievement. Immigrant children's achievement is strongly related to their exposure to a different curriculum in their home country, a fact that is rarely addressed in past educational literature on immigrant children. For example, it is widely believed that the mathematics curriculum in mainland China is more advanced than that in Hong Kong, and Hong Kong being a former British colony has an advantage over English learning. That is why we find Mainland students do well in math but not in English. Similarly, in other countries such as the U.S., Chinese immigrant children tend to outperform native White children in math (Hao & Bonstead-Bruns, 1998), and this math advantage cannot be explained by their current family and school characteristics. Some U.S. scholars attribute Chinese students' success to cultural factors such as authoritarian parenting (Dornbusch, et al., 1987) or Confucian heritage that emphasizes educational achievement (Rozman, 1991; Hsiao, 1990). Our findings here suggest that one does not need to revert to a cultural explanation for Chinese immigrant children's strong math achievement.

Our results appear to contradict a recent OECD report on literacy assessments that shows immigrant disadvantage in math, reading, and science performance in Hong Kong (OECD, 2006). This OECD report is based on data from the Programme of International

Student Assessment (PISA), an international study of literacy performance of 15-year-olds in over 40 countries. Different from our study here, the OECD analysis did not control for the grade students attend. We have shown that Mainland students are generally older than native Hong Kong students, thus the 15-year-old Mainland students are most likely to be in one or more grades below the modal grade. Students in lower grade do not learn the materials to compete with students in higher grade. That is why foreign-born students appear to be educationally disadvantaged. Recently, an exploratory study reports that Mainland Chinese immigrant students in PISA outperform their native Hong Kong peers in all subjects (all tested in Chinese) after grade is taken into account (Pong, 2007). This is further evidence that Mainland immigrant students are doing well in subjects that pose no language barrier to them.

In sum, we have found successful educational assimilation of Mainland Chinese immigrant children in Hong Kong. The success of Mainland students can be attributed to a variety of factors. Immigrant redshirting and a stronger home-country curriculum are just two factors surfaced from our data analysis. We believe that the overall positive context of reception of Mainland immigrants by the Hong Kong government after the 1990s may be an important driving force as well. Hong Kong will continue to absorb more immigrant children in the foreseeable future and help them through the educational system. Through hard work and high performance in school, most of these new immigrants should attain upward mobility in Hong Kong. Nevertheless, a recent study reports lower school attainment by Mainland students whose rates of attending college is lower compared with native Hong Kong students. Future studies need to examine why the human capital of the Mainland students does not extend beyond secondary school.



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Table 1. Profiles of Mainland Chinese Immigrant and Hong Kong Native Students

Variable	Hong Kong Native	Mainland Chinese Immigrant	All
<u>Student-level variables</u>			
being female	.500 (.5)	.510 (.5)	.502 (.5)
age 10-12	.824 (.381)	.206 (.405)	.717 (.451)
age 13-14	.174 (.379)	.533 (.499)	.237 (.425)
age 15-19	.002 (.045)	.261 (.439)	.047 (.212)
family income	2.752 (.729)	2.308 (.614)	2.675 (.730)
father's education level	3.367 (1.306)	2.917 (1.091)	3.289 (1.283)
mother's education level	3.126 (1.161)	2.942 (1.072)	3.094 (1.148)
Socioeconomic status (SES)	.088 (1.029)	-.365 (.756)	.010 (1.002)
parental expectation	5.096 (1.341)	4.942 (1.427)	5.069 (1.358)
<u>School-level variables</u>			
School mean SES	.025 (.469)	-.088 (.360)	.005 (.454)
School type			
English-medium	.287 (.452)	.208 (.406)	.273 (.446)
High-ability-Chinese-medium	.252 (.434)	.239 (.427)	.25 (.433)
Medium-ability-Chinese-medium	.251 (.433)	.239 (.426)	.248 (.432)
Low-ability-Chinese-medium	.210 (.407)	.314 (.464)	.228 (.420)
Observations	12218 (82.5%)	2586 (17.5%)	14804 (100%)

Standard deviations in parentheses

Table 2 Achievement Test in Rasch Standardized Score, by Immigrant Status

Variable	Hong Kong Native	Mainland Chinese	All	Achievement gap (Mainland - HK)
<u>Form 1 (Secondary 1)</u>				
chinese	.027	.191	.056	.164
english	.110	-.216	.053	-.326
maths	.030	.150	.051	.12
science	.037	.142	.056	.105
social studies	.051	.104	.061	.053
<u>Form 2 (Secondary 2)</u>				
chinese	.021	.149	.044	.128
english	.097	-.206	.045	-.303
maths	.017	.036	.020	.019
science	-.022	.212	.019	.234
social studies	.02	.101	.034	.081
<u>Form 3 (Secondary 3)</u>				
chinese	.037	.137	.055	.1
english	.0912	-.132	.052	-.223
maths	.043	.042	.043	-.001
science	.024	.057	.030	.033
social studies	.016	.128	.0351	.112
Observations	12218	2586	14804	

Standard deviations in parentheses. Total N=15,030.

The standard deviation of the test scores of each subject is about 1.

Table 3. HLM Analysis of Form 1 Achievement Gap by Nativity and of the Growth in Achievement Gap in Form 2 and 3

	Chinese	English	Math	Science	Soc. Studies
<u>Form 1 Test Scores</u>					
Born in Mainland	0.299** (0.019)	-0.137** (0.015)	0.226** (0.021)	0.199** (0.023)	0.143** (0.022)
<u>Form 2 Test Scores</u>					
Born in Mainland	0.102** (0.015)	-0.046** (0.011)	0.036* (0.017)	0.171** (0.021)	0.095** (0.022)
Form 1 scores	0.580** (0.007)	0.642** (0.007)	0.497** (0.008)	0.478** (0.009)	0.337** (0.010)
<u>Form 3 Test Scores</u>					
Born in Mainland	0.062** (0.016)	0.044** (0.012)	0.063** (0.018)	-0.005 (0.022)	0.126** (0.022)
Form 2 scores	0.595** (0.008)	0.661** (0.008)	0.529** (0.009)	0.456** (0.009)	0.298** (0.009)
N	11764	11204	10716	10001	10238

+ p<0.10, \* p<0.05, \*\* p<0.01

Table 4 HLM Analysis of Form 1 Achievement in Five Subjects

	Chinese	English	Math	Science	Soc. Studies
Born in Mainland	0.319** (0.023)	-0.049** (0.017)	0.177** (0.025)	0.198** (0.028)	0.144** (0.027)
Female	0.160** (0.015)	0.246** (0.011)	-0.117** (0.016)	-0.092** (0.018)	0.010 (0.018)
Age 13-14	-0.018 (0.018)	-0.049** (0.014)	0.025 (0.020)	0.024 (0.022)	0.019 (0.022)
Age 15-19	-0.035 (0.039)	-0.163** (0.029)	0.169** (0.043)	0.009 (0.049)	-0.006 (0.047)
SES	-0.004 (0.008)	0.083** (0.006)	-0.023** (0.009)	0.002 (0.010)	-0.001 (0.009)
Parent expectation	0.046** (0.006)	0.049** (0.004)	0.048** (0.006)	0.056** (0.007)	0.042** (0.006)
English-medium	1.359** (0.095)	1.643** (0.085)	1.299** (0.099)	0.735** (0.109)	0.877** (0.106)
HB Chinese-medium	1.072** (0.081)	1.005** (0.072)	1.111** (0.083)	0.989** (0.093)	0.850** (0.092)
MB Chinese-medium	0.665** (0.076)	0.585** (0.067)	0.629** (0.083)	0.485** (0.093)	0.471** (0.091)
School mean SES	0.169* (0.076)	0.377** (0.068)	0.142+ (0.085)	0.154 (0.094)	0.135 (0.091)
N	11764	11204	10716	10001	10238

+ p<0.10, \* p<0.05, \*\* p<0.01, dummy variables indicating missing age and parental expectations are included in the regression.

Table 5. HLM Analysis of Form 2 Achievement in Five Subjects, Controlling for Form 1 Achievement

	Chinese	English	Math	Science	Soc. Studies
Born in Mainland	0.139** (0.019)	-0.011 (0.013)	0.060** (0.021)	0.161** (0.026)	0.109** (0.027)
Female	0.088** (0.012)	0.110** (0.009)	-0.031* (0.014)	-0.142** (0.017)	-0.081** (0.018)
Age 13-14	-0.014 (0.015)	-0.035** (0.011)	-0.032+ (0.017)	0.001 (0.020)	-0.034 (0.022)
Age 15-19	-0.097** (0.031)	-0.064** (0.023)	-0.033 (0.037)	0.076+ (0.044)	0.009 (0.048)
SES	-0.007 (0.006)	0.031** (0.005)	-0.010 (0.007)	-0.006 (0.009)	-0.017+ (0.010)
Parent expectation	0.035** (0.004)	0.027** (0.003)	0.036** (0.005)	0.047** (0.006)	0.046** (0.007)
English-medium	0.583** (0.069)	0.832** (0.060)	0.640** (0.082)	0.024 (0.088)	0.281** (0.090)
HB Chinese-medium	0.446** (0.059)	0.329** (0.051)	0.448** (0.069)	0.358** (0.075)	0.330** (0.078)
MB Chinese-medium	0.229** (0.055)	0.148** (0.047)	0.067 (0.068)	0.089 (0.075)	0.143+ (0.077)
School mean SES	0.059 (0.055)	0.014 (0.047)	0.092 (0.070)	0.163* (0.076)	0.116 (0.077)
Form 1 achievement	0.562** (0.007)	0.598** (0.007)	0.486** (0.008)	0.464** (0.009)	0.326** (0.010)
N	11764	11204	10716	10001	10238

+ p<0.10, \* p<0.05, \*\* p<0.01, dummy variables indicating missing age and parental expectations are included in the regression.

Table 6. HLM Analysis of Form 3 Achievement in Five Subjects, Controlling for Form 2 Achievement

	Chinese	English	Math	Science	Soc. Studies
Born in Mainland	0.115** (0.019)	0.070** (0.015)	0.072** (0.022)	0.065* (0.027)	0.133** (0.027)
Female	0.179** (0.013)	0.127** (0.010)	-0.017 (0.014)	0.025 (0.018)	0.094** (0.018)
Age 13-14	-0.062** (0.015)	-0.023* (0.012)	-0.018 (0.017)	-0.068** (0.022)	-0.002 (0.021)
Age 15-19	-0.098** (0.033)	-0.087** (0.025)	-0.003 (0.038)	-0.166** (0.047)	-0.045 (0.047)
SES	-0.014* (0.007)	0.004 (0.005)	-0.014+ (0.008)	-0.011 (0.009)	-0.032** (0.009)
Parent expectation	0.031** (0.005)	0.034** (0.004)	0.042** (0.005)	0.044** (0.006)	0.045** (0.006)
English-medium	0.457** (0.068)	0.629** (0.087)	0.520** (0.089)	0.349** (0.077)	0.480** (0.123)
HB Chinese-medium	0.332** (0.058)	0.235** (0.073)	0.365** (0.075)	0.375** (0.066)	0.410** (0.106)
MB Chinese-medium	0.151** (0.054)	0.184** (0.068)	0.217** (0.074)	0.196** (0.066)	0.210* (0.105)
School mean SES	0.102+ (0.054)	0.040 (0.068)	0.128+ (0.077)	0.122+ (0.067)	0.191+ (0.104)
Form 2 achievement	0.569** (0.008)	0.613** (0.008)	0.513** (0.009)	0.445** (0.009)	0.291** (0.009)
N	11764	11204	10716	10001	10238

+ p<0.10, \* p<0.05, \*\* p<0.01, dummy variables indicating missing age and parental expectations are included in the regression.

Table 7. Interaction Between Nativity and School Type

	Chinese	English	Math	Science	Soc. Studies
<u>Form 1 Test Scores</u>					
Born in Mainland(M)	0.384** (0.039)	0.037 (0.029)	0.362** (0.043)	0.349** (0.050)	0.187** (0.050)
English-medium	1.392** (0.096)	1.664** (0.085)	1.376** (0.099)	0.800** (0.111)	0.905** (0.108)
HB Chinese-medium	1.083** (0.082)	1.035** (0.072)	1.173** (0.084)	1.039** (0.094)	0.863** (0.093)
MB Chinese-medium	0.683** (0.077)	0.616** (0.067)	0.677** (0.083)	0.519** (0.095)	0.472** (0.092)
M x (Eng-medium)	-0.171** (0.053)	-0.076+ (0.040)	-0.334** (0.058)	-0.286** (0.065)	-0.139* (0.064)
M x (HB Chi-medium)	-0.025 (0.052)	-0.127** (0.039)	-0.237** (0.057)	-0.195** (0.064)	-0.044 (0.063)
M x (MB Chi-medium)	-0.068 (0.052)	-0.144** (0.039)	-0.154** (0.058)	-0.093 (0.068)	0.029 (0.065)
<u>Form 2 Test Scores</u>					
Born in Mainland (M)	0.168** (0.031)	0.052* (0.023)	0.105** (0.037)	0.242** (0.046)	0.152** (0.050)
English-medium	0.599** (0.070)	0.857** (0.061)	0.659** (0.082)	0.063 (0.089)	0.305** (0.091)
HB Chinese-medium	0.461** (0.060)	0.349** (0.051)	0.462** (0.070)	0.384** (0.076)	0.345** (0.079)
MB Chinese-medium	0.231** (0.056)	0.167** (0.048)	0.081 (0.069)	0.105 (0.076)	0.146+ (0.079)
M x (Eng-medium)	-0.066	-0.107**	-0.080	-0.175**	-0.112+

M x (HB Chi-medium)	(0.042)	(0.031)	(0.049)	(0.059)	(0.064)
	-0.064	-0.076*	-0.049	-0.093	-0.054
	(0.042)	(0.031)	(0.048)	(0.058)	(0.064)
M x (MB Chi-medium)	0.012	-0.071*	-0.048	-0.037	0.011
	(0.042)	(0.030)	(0.050)	(0.062)	(0.066)

Form 3 Test Scores

Born in Mainland	0.192**	0.086**	0.228**	0.214**	0.263**
	(0.033)	(0.025)	(0.038)	(0.048)	(0.050)
English-medium	0.487**	0.636**	0.583**	0.398**	0.532**
	(0.069)	(0.087)	(0.090)	(0.079)	(0.123)
HB Chinese-medium	0.358**	0.238**	0.418**	0.425**	0.448**
	(0.059)	(0.073)	(0.076)	(0.068)	(0.107)
MB Chinese-medium	0.174**	0.190**	0.263**	0.243**	0.246*
	(0.055)	(0.068)	(0.075)	(0.068)	(0.106)
M x (Eng-medium)	-0.131**	-0.030	-0.255**	-0.195**	-0.229**
	(0.044)	(0.034)	(0.050)	(0.063)	(0.064)
M x (HB Chi-medium)	-0.098*	-0.007	-0.196**	-0.201**	-0.136*
	(0.044)	(0.034)	(0.050)	(0.061)	(0.063)
M x (MB Chi-medium)	-0.087*	-0.028	-0.162**	-0.187**	-0.126+
	(0.043)	(0.033)	(0.051)	(0.065)	(0.065)

N	11764	11204	10716	10001	10238
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+ p<0.10, \* p<0.05, \*\* p<0.01



Table 8. Interaction Between Nativity and Age

	Chinese	English	Math	Science	Soc. Studies
<u>Form 1 Test Scores</u>					
Born in Mainland (M)	0.216** (0.036)	-0.087** (0.027)	-0.014 (0.039)	0.121** (0.045)	0.126** (0.043)
Age 13-14	-0.050* (0.020)	-0.059** (0.015)	-0.033 (0.022)	0.000 (0.025)	0.014 (0.024)
Age 15-19	-0.117 (0.184)	-0.322* (0.134)	0.031 (0.213)	0.094 (0.224)	-0.023 (0.227)
M x (age 13-14)	0.171** (0.046)	0.059+ (0.035)	0.315** (0.050)	0.128* (0.057)	0.029 (0.055)
M x (age 15-19)	0.184 (0.190)	0.201 (0.138)	0.328 (0.219)	-0.013 (0.231)	0.035 (0.233)
<u>Form 2 Test Scores</u>					
Born in Mainland	0.073* (0.029)	-0.041* (0.021)	0.014 (0.033)	0.108** (0.041)	0.076+ (0.044)
Age 13-14	-0.034* (0.016)	-0.043** (0.012)	-0.046* (0.019)	-0.013 (0.023)	-0.046+ (0.024)
Age 15-19	-0.243 (0.148)	-0.184+ (0.104)	-0.085 (0.181)	-0.104 (0.203)	0.301 (0.229)
M x (age 13-14)	0.107** (0.037)	0.047+ (0.027)	0.076+ (0.043)	0.081 (0.052)	0.061 (0.056)
M x (age 15-19)	0.214 (0.153)	0.153 (0.108)	0.098 (0.186)	0.236 (0.210)	-0.268 (0.236)
<u>Form 3 Test Scores</u>					
Born in Mainland	0.029 (0.030)	-0.008 (0.023)	-0.017 (0.034)	0.039 (0.043)	0.003 (0.043)

Age 13-14	-0.088** (0.017)	-0.047** (0.013)	-0.043* (0.019)	-0.074** (0.024)	-0.038 (0.024)
Age 15-19	-0.254+ (0.154)	-0.147 (0.114)	-0.278 (0.187)	-0.408+ (0.215)	-0.351 (0.226)
M x (age 13-14)	0.140** (0.039)	0.128** (0.029)	0.142** (0.044)	0.036 (0.055)	0.205** (0.055)
M x (age 15-19)	0.244 (0.159)	0.137 (0.118)	0.369+ (0.192)	0.275 (0.222)	0.441+ (0.232)
N	11764	11204	10716	10001	10238

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+ p<0.10, \* p<0.05, \*\* p<0.01