Choice of Fields of Study of Asian American Youth in the U.S:

--Ethnic and gender differences

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Introduction

Asian American students have become the fastest growing minority group enrolled in selective public and private institutions on both coasts of the United States (Hsia 1989). The varieties of distinctive Asian faces present on U.S campus and their tendency to concentrate in the fields of science and engineering have attracted public attention. Research has been continuously reporting the descriptive statistics of the degrees garnered by different racial-ethnic groups (Miller 1995), leaving people to wonder about the driving forces behind the differential rate of concentration in fields of study. This study undertook the preliminary investigation of the factors that contribute to Asian American students' concentration in certain college majors such as science and engineering.

Gender differences in terms of college field concentration have been a perennial topic along this line of inquiry (Davis and Guppy 1997, Jacob 1995). But most of the research treats females as one big separate group, leaving us to wonder about the possible variation among women across racial-ethnic groups. However, a few studies indeed found the interaction effects of gender and race/ethnicity. For example, it has been reported that African-American women are expressing greater self-confidence than

women in other racial-ethnic groups with regard to science and engineering education and education in general (Hanson 1996). On the other hand, Hispanic women seem to lag behind Hispanic men in measures of both performance and confidence (Ware and Lee 1988; Catsambis 1994). We know that Asian American youth have the tendency to choose quantitative fields. How about Asian American women? Do they carry over the same tendency as their male counterparts, or are they more similar to their female counterparts who would shun those quantitative fields? This study examined these questions.

As Kao (1995), X.Chen (1996), and others have recognized Asian Americans are far from a homogeneous group. Apart from cultural differences among the Asian ethnic groups, they immigrated to the United States under different circumstances and various immigration laws. Moreover, generational status has been identified having significant impact over one's educational outcomes (Kao and Tienda 1995; Rong and Grant 1992). Therefore, this study investigated the differences among distinct Asian ethnic groups with regard to their choice of college major field of study. Specifically, these groups are Chinese, Filipino, Japanese, Korean, Southeast Asian, and South Asian. This research paid special attention to the role played by generational status in examining the Asian-white gap and cross-ethnic variation within Asian American group in the outcome of college major choice.

This study drew from existing literature in economics, psychology and education that have identified certain explanatory factors that influence students' choice

of college major, especially the field of science and engineering. Considering Asian American students are mostly immigrant children or children from immigrant families, this study also drew upon assimilation theory in sociology. The empirical work was based on an analysis of data from the National Educational Longitudinal Study (NELS: 88-94). I used logistic regression to explain differences in choice of college major between Asian and whites, and among Asian distinct ethnic groups. The longitudinal nature of NELS affords a great opportunity to study how high school experiences affect the choice made in college.

Explanatory Factors

Economic Theory: Human Capital Model

Human capital theory has been quite influential in studying individuals' occupational selection and educational choices. It emphasizes that individuals are consciously capitalizing on their comparative advantages and different family/work orientation in their choice of college majors (Montmarquette et al.2002; Polachek 1978). Polachek (1978) has found that males have higher quantitative aptitude than females and thus gravitate toward quantitative fields, whereas females have less labor market commitment and opt for fields that are not demanding for continuous human capital investment. In a similar fashion, Blakemore and Low (1984) explicitly use human capital approach to study sex differences in college majors. They use expected fertility rate as a key measure for labor market commitment. They have found that the expected fertility

rate for young women weighs heavily against the odds of selecting the physical sciences/engineering fields relative to education, all else equal. The odds of selecting a business major is negatively influenced next most by expected fertility rate, followed by social sciences, biology and humanities. Unfortunately, NELS does not have good measure of expected fertility rate. I only used comparative advantage as one of the predictors in my analysis.

Psychological Theory: Expectancy-Value Model

In her formulation of the "Expectancy-Value" model of achievement-related choices, Eccles (1986, 1994) argues that it is important to recognize the achievement in specific substantive areas, such as math and science, and the development of specialized knowledge are themselves short-term goals that individuals set and work toward. Achievement-related goals, such as course selection in school, early career aspirations, and the allocation of time and effort across various activities, are directly affected by "the individual's expectations for success and the importance or value the individual attaches to the various options perceived by the individual as available" (Eccles 1994:587). In this context, comparative advantages, posited in human capital framework as major determinant of later choice, are themselves individuals' choice to develop. Affective factors, such as interest, have been hypothesized to explain differences in achievement, as well as differences in participation and choice that cannot be explained by differences in achievement. Research has shown that young girls are consistently more likely than boys to say that they do not like math and to express a desire to avoid taking math and science

classes (Oakes 1990). Accordingly, this study incorporated affective factors such as attitude toward the subject of math, to explain the gender and racial/ethnic differentials.

Educational Theory: Differential Course-Taking Hypothesis

Course-taking patterns, including both level and number of courses taken in certain subjects, have been consistently identified by educational literature as one of the most powerful predictors for achievement and later participation in that field. For example, participation in mathematics and science courses in high school has been characterized as a "critical filter" that regulates entry into science and engineering concentrations in higher education (Lee and Burkam 1996). Students who enroll in certain elective courses will have more exposure to the subject matter, thus more opportunity to prepare for the standardized test of the subject matter and potentially, a college major in the subject matter. Recently, research has documented that gender gap in high school math courses participation has been narrowed (Catsambis 1994, Oakes 1990). But little has been known regarding the gap between whites and Asians in terms of their advanced math course-taking in high school. This study took on this task and tried to examine the link between the course-taking in high school and choice of field of study in college.

Assimilation Theory

Few transformations are more profound to U.S school and society than the increasing presence of first and second-generation immigrants. Today's newcomers are mostly from Asia and Latin America, and very often, handicapped by language barriers.

Their school experience, their path to achievement and choice, are intertwined with, and influenced by their assimilation processes to American society. Therefore, assimilation theory in sociological literature has useful relevance here. Straight-line assimilation framework predicts that, over time, ethnic and racial minorities will blend into the mainstream culture and become indistinguishable from majority native populations (Park, 1914; Gordon, 1964). Following this reasoning, this study posits that Asian American youth living in the U.S for longer period of time tend to be more similar to their white counterparts with regard to choice of field of study than recent immigrants. However, a more recent development in the literature has suggested accommodation without assimilation (Gibson, 1993) pattern among immigrant youth. Asian American students might have been remaining in their educational niche of science and engineering fields, despite their English proficiency and familiarity of American society. This study can be used to test which approach more fits the reality in this case.

Data and Sample

This study uses data from the National Educational Longitudinal Study (NELS:88-94). A sample of 24,599 eighth graders were surveyed in 1988 and reinterviewed in 1990, 1992, 1994. The NELS is particularly suitable for this study for the following reasons. First, its longitudinal nature allows studying how high school experience such as attitudes, course taking behaviors, and performance influence later college major choice. Second, it oversampled Asians: over 1,000 in the base-year survey. This oversampling, along with detailed information on Asian ethnicity, enables to make

cross-ethnic comparisons within the Asian American subpopulation.

To highlight the link between high school experience and choice of college major, I focus on college students' initial choice of major. Later changes—entry into and exit out of different fields of study--are more contingent upon the particular postsecondary context and therefore beyond the scope of the current study. The sample of this study includes all the Asian American students (excluding pacific islanders) and whites to allow an examination of high school experience relevant to college major choice. The sample, accordingly, includes 234 Chinese, 183 Filipino, 61 Japanese, 134 Korean, 183 Southeast Asian, 75 South Asian, 110 other Asian and 9613 whites.

Variables

College Major Field of Study There are over a hundred categories for various fields of study in NELS. I fit them into four broad categories. First category is natural sciences/engineering, excluding life/health sciences; second category is biology/life sciences; third category is economics/business; the last category is all else. This classification has been similar to most of the studies (some have finer distinctions in the last category) except on one aspect: many studies group the first and second category together under one label of science and engineering. A bunch of research addressing the under representation of women and minorities in science and engineering have been using this kind of grouping. However, recent research has found that there is a widening divide between the life sciences, on the one hand, and math-physical-engineering, on the other hand, in their attractiveness to men and women (Turner and Bowen, 1999). I will

also show later in the results section that the separation of life sciences from math/engineering has genuine significance for females. Based on this rationale, my regression analysis of gender and racial gaps focused on the outcome of whether students choose natural science/engineering except life science major in college. However, for the multivariate analysis of Asian ethnicity, I have to combine all the natural science and engineering together into one group to make the cell size big enough to generate stable estimate.

Background Characteristics

Gender/Race/Ethnicity This study is interested in the gender and racial gaps between Asian and whites in general and cross-ethnic comparisons within Asian subpopulation in particular. Therefore, I cross classify gender and race to generate four categories: white male, white female, Asian male, and Asian female. In the regression model, I made white female as reference group. For ethnic comparisons, there are seven distinct Asian ethnic groups, and I made white as reference group. These seven Asian ethnic groups are Chinese, Filipino, Japanese, Korean, Southeast Asian, South Asian and other Asian (those who identified themselves as Asian by race but did not choose an ethnic category).

Generation Status Two dummy variables are constructed to measure generation status of each student in the sample. First generation means that both the child and at least one of the child's parents were born outside the U.S. Second generation refers to those born in the U.S, but having at least one parent born outside the U.S. Third generation refers to both the child and parents were born in the U.S.

SES Index This is a composite index constructed by NCES. It was based on the prestige of the mothers' and fathers' occupations (scored with the Duncan Socioeconomic Index Scale), family income, and both parents' levels of education, with each component equally weighted. This index is standardized to have a mean of 0 and a standard deviation of 1 for the entire sample (NCES 1990).

Math Attitude Measures of students' attitudes toward math are available in the base year and first follow-up of the NELS. Members of the NELS cohort were asked to agree or disagree to a series of three questions about their attitudes toward math when they were in 8th grade: "I usually look forward to math class," "I am often afraid to ask questions in math class," and "Math will be useful in my future". When they were in 10th grade, this cohort of students were asked to rate their feelings about a series of statements about math as either "False," "Mostly false," "More false than true," "More true than false," "Mostly true" or "True." These statements included: "Math is one of my best subjects," "I have always done well in math" and "I get good marks in math." I collapse the categories of the original 6-point scales used to measure students' degree of agreement into a dummy variable where 1 indicates positive attitudes, and 0 indicates negative attitudes.

Course Participation Since I have no access to transcript data of NELS during this study (I am in the process of applying for a license of restricted-use data), measures of course participation are coming from students' self-reports, and only available for 8th grade and 10th grade cohort. At 8th grade, three measures are included: whether in enriched/advanced English course; whether in enriched/advanced math course; whether

to attend algebra at least once a week. At 10th grade, the enrollment in the following six types of math courses is assessed: (1) Algebra I, (2) Geometry, (3) Algebra II, (4) Trigonometry, (5) Pre-Calculus, and (6) Calculus. I use a series of dummy variables to indicate the participation in specific types of math courses.

Standardized Achievement Score NELS has conducted standardized achievement tests for English, math, science and social studies at the base year, first follow-up and second follow-up. I use second follow-up standardized test for math studies as the measure for achievement, which is the most recent, presumably most relevant for students to affect their choice in college. For the missing in 2nd follow-up, I would replace it with the score in the first follow-up; if still missing, I would replace it with the base year.

Results

College Major Choice by Gender, Race and Ethnicity

[Table 1 Appears here]

Table 1 reports the frequency distribution of college major choice between male and female, Asian Americans and whites. The result confirms earlier research in that males, both whites and Asians, are much more likely to major in natural science (excluding life sciences) and engineering. What is less researched and reported is the variation within the same gender group. Disaggregating women into two racial groups, we can see that Asian women are two times as likely as white women to major in natural science and engineering (excluding life science). It also corroborates the finding of

Turner and Bowen (1999) that the field of life/health sciences is more appealing than other natural sciences to women. Table 1 shows that among the four groups, Asian females are the most likely to major in life/health sciences, followed by Asian males, then white females, and the last is white males. As for the field of economics/business, we can see that there is a significant extent of desegregation between genders: the difference in terms of concentration is negligible between males and females, for both racial groups. However, more prominent gap occurs between Asians and whites. Both Asian males and females are consistently much more likely to major in economics/business than white males and females.

[Table 2 Appears here]

Table 2 shows the frequency distribution of college major choice by Asian ethnicity. We can see that all Asian ethnic groups, without exception, are more likely to major in natural sciences and engineering (excluding life sciences) than whites. Chinese, Koreans and Southeast Asian students are more concentrated in this field than other Asian ethnic groups. For life sciences, again Asian Americans are highly concentrated in this field, except for Japanese, all the Asian ethnic groups are much more likely to major in life/health sciences than whites, with Pilipino and South Asian Americans two times and three times as likely to choose this field as whites respectively. Asian ethnic groups are also having higher probability of choosing economics and business. Japanese again stands as an exception. Chinese is, among all the groups, the most likely to choose economics/business as their college major.

Asian American Background Characteristics by Ethnicity

[Table 3 Appears here]

Table 3 presents descriptive statistics on students' background characteristics by ethnicity. It includes generation status, SES index and standardized score for reading and math. A natural conclusion from examining this table is that Asian Americans are too heterogeneous across ethnic boundaries to be treated as a single group. For instance, 44.2 percent of the Japanese American students but only 1.6 percent Southeastern American students were third generation. The southeast Asian Americans were also far less well off on SES index and standardized reading score, the only group among Asian Americans falling behind the whites. However, all Asian ethnic groups excel in standardized math score than whites.

Math Attitude by Gender, Race and Ethnicity

[Table 4 Appears here]

Table 4 reports the frequency distribution of math attitudes measured in 8^{th} grade and 10^{th} grade between male and female for Asian Americans and whites. Consistently, Asian Americans, male and female alike, report more positive attitudes toward math than whites, just except one measure: Asians are more afraid to ask questions in math class than whites. I speculate this has something to do with the fact that most of the Asian Americans are first or second generation immigrant children. Both due to the language and cultural barrier, they are not as accustomed to the American style of asking questions in classroom. Another noteworthy finding from this table is that the gap

of positive attitude between Asian females and white females is more prominent than that between Asian males and white males. For example, Asian females are 17 percent more likely to say "I've always done well in math" than white females, while Asian males are about 7 percent more likely to say so than white males.

[Table 5 Appear here]

Table 5 gives statistics on math attitude for detailed Asian ethnic groups. Japanese Americans consistently stand as exception to all the other Asian ethnic groups, in that they are not as positive toward math as the other Asian groups. For instance, Japanese is the only Asian group less likely to say that "I always look forward to math class" than whites at 8^{th} grade, the only Asian group less likely to say "math is one of my best subjects" than whites at 10^{th} grade. Interestingly, Japanese Americans are the single Asian group less likely than whites to report "afraid to ask questions in math class". This echoes with our speculation that generation status might play a role here, since the percentage of Japanese American children being third generation is the highest among all the Asian ethnic groups.

Coursework Participation by Gender, Race and Ethnicity

[Table 6 appears here]

Table 6 presents coursework participation between male and female, Asian Americans and whites at 8^{th} grade and 10^{th} grade. The general finding is that the

well-acclaimed gender differential in course taking is far less serious than racial differential, namely, between Asian Americans and whites. Asian Americans, male and female alike, are both much more likely to participate in math courses at 8th grade and 10th grade than their white counterparts. The gap is more prominent with high-level math courses at 10th grade such as Trigonometry, Pre-calculus and Calculus: the proportion of Asian females participating in Trigonometry is almost 3 times as large as that of white females, and the proportion of Asian females in Pre-calculus is over 4 times as large as that of white females. The gap between Asian males and white males is also considerable, but a bit smaller in magnitude than that between females.

[Table 7 appears here]

Table 7 again gives detailed statistics for Asian ethnic groups on coursework participation at 8th and 10th grade. Overwhelmingly, ALL Asian ethnic groups have higher participation rate in these courses, even including advanced English at 8th grade, than whites. Japanese, and occasionally, Filipinos, are less likely than their other Asian groups to participate in those courses, but still more likely than their white counterparts.

There are basically two major conclusions from examining the descriptive statistics here. One is that there is great variation among Asian ethnic groups and Japanese often stand out as exception to all the other groups; the second is that the Asian females are more similar to Asian males, than to their female white counterparts in the variables and outcome we are interested in.

Logistics Regression

The results from logistic regression analysis demonstrate how generational status, measures of math attitudes and coursework, and standardized math score explain the Asian-white gap, and cross-ethnic gap within Asian Americans group in college major choice. I first examine the differences among four groups (Asian female, Asian male, white female, white male) out of cross-classifying race and gender and treat white female as reference group. Table 8 presents estimated coefficients for five logistic regression models, from baseline to full model. The dependent variable is whether students choose natural science/engineering (excluding life sciences) as their first college major. Since life sciences attract far more females than other S/E fields, I separate life sciences out from other natural science and engineering field, in order to better understand the gender gaps here.

[Table 8 Appears here]

The first model in table 8 is our baseline model, without any explanatory factors included. The baseline model depicts a consistent picture with our descriptive analysis in previous section. White males, Asian females and males are all significantly much more likely to choose S/E (excluding life sciences) fields than white females, with Asian males nearly 7 times as likely as white female to do so. Model 2 adds students' generation status, with third-generation and plus being reference group. We notice that second generation status significantly increases the probability of choosing S/E (excluding life sciences) by nearly 50%, and the gap between Asian females and white females becomes insignificant, and the gap between Asian males and white females is reducing in magnitude, once

generation status is taken into account in model 2. Model 3 introduces a set of math attitude measures. I only include one measure in 10th grade as the other two measures are highly correlated with the remaining measure. Students with positive math attitudes do show a stronger tendency to choose S/E (excluding life sciences), but this doesn't reduce the gender or racial gap to a great extent. Model 4 adds a series of measures of course participation. We can see that not all the high-level math courses matter, in particular, geometry and algebra 2 taken at 10th grade significantly enlarge the likelihood of choosing S/E (excluding life sciences). In model 5, the standardized math achievement score is added, which explained considerable differential between Asian males and white females, and a small amount of the difference between white males and white females.

[Table 9 Appears here]

I then examine the cross-ethnic differential within Asian American subpopulation. In order to get enough cell size for regression models, I combine the first two categories of major field of study. Therefore, the dependent variable is whether to choose a science/engineering field as the initial college major (yes=1). Table 9 shows how, the same set of explanatory factors as presented in table 8, explains the cross-ethnic gaps in their tendency to choose a S/E major. Model 1 only includes bivariate effects of ethnicity. All the Asian ethnic groups, except Japanese, are significantly more likely to major in S/E than whites. Model 2 adds students' generation status. Second-generation immigrant Asians are nearly 30% more likely to major in S/E than whites, and once generation status is controlled, the significant effect of Korean disappeared. Model 3

introduces students' math attitude. As expected, positive math attitude predicts higher chance of major in S/E. Noticeably, the gap between Chinese and whites became statistically insignificant, and the gap is narrowed between Southeast Asian and whites, and south Asian and whites, after math attitude is taken into account. Model 4 adds a series of measures for coursework participation. Geometry and Algebra 2 taken at 10^{th} grade are significant in predicting a S/E major. The differential between Southeast Asian and whites dropped to be insignificant after coursework is controlled. In the full model, we add standardized math score, and the effect of south Asian dropped to be insignificant. Now after all the explanatory factors controlled, the only Asian group still remains to be significantly more likely to choose S/E than whites is Filipinos.

Conclusion

The primary goal of this study was to describe and explain the gender and ethnic differences in college major choice of Asian Americans, as compared to whites. To do so, I focused on four sets of explanatory factors: generational status and socioeconomic characteristics, attitudes toward math subject in high school, coursework participation in high school, and comparative advantage measured by standardized achievement scores. Asian females show a much stronger tendency than white females to major in natural science and engineering (excluding life sciences), but still less than both white males and Asian males. However, the gap between Asian females and white females can be explained by generation status. Math attitudes and coursework participation explain some of the gap between Asian males and white females.

Japanese stands out from Asian Americans in being the single group not gravitating toward the field of science/engineering, as compared to whites. Since Japanese Americans have a far higher percentage of third-generation and plus than other Asian ethnic groups, this might be regarded as evidence to straight-line assimilation: as the time in the U.S gets longer, ethnic minority shows more similarity with majority whites. For other Asian ethnic group, sets of explanatory factor do explain away the significant gap between their group and whites. For example, generational status explains the gap between Korean and whites. Math attitudes, together with generational status make the gap between Chinese and whites drop to insignificant. I won't repeat here for other groups as the result section has mentioned it already. The only group still remains significant after all the explanatory factors are controlled is Filipino. As our descriptive results show, Filipino is much more concentrated in life/health sciences than other science and engineering fields. It might have something to do with the immigrant history for this group: a lot of Filipino immigrated to the United States as health workers. Unfortunately, my data doesn't allow me to include this as part of my analysis. This paper is strictly focusing on the individual-level explanatory factors. The question down the road is: how have these individual-level factors come into being? Why Asian Americans, male and female alike, have more positive attitude toward math? Why they take more advanced math courses in high school? To answer these questions, I need to bring in institutional factors such as family, school and occupational structure into the analytical framework. This is the further direction this research is going.

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Table 1. Choice of Fields of Study by Gender and Race

	Science. /engineering	Life/Health Sciences	Economics /business	All else	
Female					Total (N)
Asian	6.06%	25.45%	17.37%	51.11%	495
White	3.01	15.14	9.8	72.06	4849
Total	3.29	16.09	10.5	70.12	5344
Male					
Asian	17.32	16.49	17.11	49.07	485
White	10.05	8.08	10.81	71.05	4764
Total	10.73	8.86	11.39	69.02	5249

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 2. Choice of Fields of Study by Asian Ethnicity

	S/E excluding Life sciences	Life/Health Sciences	Economics /business	All else	
Ethnicity					**Total (N)**
White	6.5%	11.64%	10.3%	71.56%	9613
Chinese	12.82	18.8	25.64	42.74	234
Filipino	9.84	27.32	12.02	50.82	183
Japanese	11.48	11.48	8.2	68.85	61
Korean	12.69	14.93	14.93	57.46	134
Southeast	12.02	22.4	15.85	49.73	183
South Asian	10.67	36	14.67	38.67	75
Other Asian	10.91	15.45	20	53.64	110
Total	6.98%	12.51%	10.94%	69.57%	10593

Data Source: NELS: 88-94
Note: the percentage is weighted.

Table 3 Descriptive Statistics on Students' Generation Status and Socioeconomic Characteristics and Tested Ability, by Ethnicity

	White	Chinese	Filipino	Japanese	Korean	Southeast Asian	South Asian	Other Asian
Students' Generation								
First	0.91%	36.32%	36.61%	18.03%	38.81%	71.04%	44%	30.91%
Second	3.9	33.33	42.08	26.23	36.57	7.1	41.33	13.64
Third	86.13	6.84	7.1	44.26	11.19	1.64	2.67	39.09
Missing	9.06	23.5	14.21	11.48	13.43	20.22	12	16.36
SES index	0.08	0.16	0.21	0.43	0.39	-0.38	0.81	0.18
Standardized Reading Score	51.38	52.94	52.25	54.28	56.05	49.81	58.46	53.01
Missing	0.95	4.70	1.09	0.00	2.24	4.92	1.33	1.82
Standardized Math Score	51.47	59.23	53.95	57.18	58.65	53.50	60.29	53.26
Missing	0.98	4.70	1.09	0.00	2.24	4.37	1.33	1.82

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 4. Distribution of Math Attitudes* by Gender and Race at 8th Grade and 10th Grade

		Female		Male	
8th grade		White	Asian	White	Asian
	Look forward to math class	50.86%	64.8%	55.65%	70.69%
	Afraid to ask questions in math class	21.8	22.43	16.17	21.98
	Math is useful in my future	86.29	94.84	89.08	91.85
10th grade	Math is one of my best subjects	54.04	64.95	66.96	76.73
	I have always done well in math	60.43	77.18	70.79	78.02
	I have always get good marks in math	66.15	76.3	73.19	79.24

*the percentage given is the positive response to the statements in question.

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 5. Distribution of Math Attitudes* by Asian Ethnicity at 8th Grade and 10th Grade

	8th grade			10th grade		
	Look forward to math class	Afraid to ask questions…	Math is useful in my future	Math is one of my best..	I've done well in math	I get good marks in math
White	53.19%	19.05%	87.65%	60.35%	65.49%	69.59%
Chinese	71.2	27.89	92.63	77.17	82.42	81.77
Filipino	62.11	26.71	95.03	65.41	72.96	73.72
Japanese	49.06	16.98	98.11	57.69	65.38	65.38
Korean	62.71	19.49	93.1	70.59	78.99	81.58
Southeast	80.56	21.68	95.1	73.2	80.39	75.66
South Asian	69.12	11.76	91.18	76.06	85.92	88.57
Other Asian	66	18	89	65.96	70.21	73.91

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 6 Distribution of Coursework Participation by Gender and Race at 8th Grade and 10th Grade

		Female		Male	
		White	Asian	White	Asian
8th grade					
	Advanced English	30.55%	50.23%	27.38%	41.07%
	Advanced Math	37.62	58.51	40.39	63.41
	Algebra	38.29	61.08	39.78	61.7
10th grade					
	Algebra I	70.56	71.93	68.99	67.15
	Geometry	56.23	76.52	55.37	72.2
	Algebra II	28.15	46.41	29.6	49.39
	Trigonometry	6.93	18.99	8.87	22.92
	Pre-Calculus	1.23	5.06	2.19	6.67
	Calculus	0.7	2.9	1.63	3.83

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 7 Distribution of Coursework Participation by Asian Ethnicity at 8th Grade and 10th Grade

	8th grade			10th grade					
	Adv Eng	Adv Math	Algebra	Algebra 1	Geometry	Algebra 2	Trigonometry	Pre-cal	Calculus
White	29.01%	38.97%	39.01%	39.01%	55.81%	28.85%	7.86%	1.69%	1.14%
Chinese	46.6	66.67	66.13	66.13	84.65	56.91	27.02	8.83	4.97
Filipino	40.91	52.26	54.9	54.9	66.46	35.81	15.53	4.35	3.1
Japanese	29.63	54.55	56	56	62	43.14	11.76	2	2
Korean	49.14	64.71	69.37	69.37	74.14	61.74	23.21	5.46	0
Southeast	53.85	68.31	59.7	59.7	76.13	42.95	18.49	6.16	4.83
South Asian	53.85	71.21	74.58	74.58	85.72	55.88	31.34	4.55	7.58
Other Asian	40.21	44.44	49.44	49.44	63.16	38.05	16.48	5.49	0

Data Source: NELS: 88-94

Note: the percentage is weighted.

Table 8 Estimated Coefficients of Logistic Regression Models Predicting Choice of MSE College Major

	Model 1	Model 2	Model 3	Model 4	Model 5
Race/Gender (White female excluded)					
White Male	3.601**	3.692**	3.354**	3.578**	3.293**
Asian Female	2.078**	1.511	1.352	0.992	0.852
Asian Male	6.748**	4.698**	4.369**	3.411**	2.777**
Generation (third excluded)					
First		1.406	1.277	1.386	1.467
Second		1.458*	1.443*	1.350	1.249
SES Index		0.966	0.976	0.995	1.005
Math Attitude					
Look forward to math class			1.142	1.092	1.105
Afraid to ask questions			0.835	0.820	0.934
Math will be useful			1.511*	1.526*	1.466
Always done well in math			2.615**	2.008**	1.367*
Coursework					
Advanced English				1.051	1.081
Advanced math				1.253	1.239
Algebra at 8^{th} grade				1.386**	0.999
Algebra 1 at 10^{th} grade				0.854	0.902
Geometry at 10^{th} grade				1.595**	0.977
Algebra 2 at 10^{th} grade				1.448**	1.064
Trigonometry				1.254	1.142
Pre-calculus				0.884	0.844
Calculus				0.827	0.983
Standardized Math Score					1.093*

The model includes all the missing flags.

***p<.01 *p<.05*

Table 9. Estimated Coefficients of Logistic Regression Models Predicting Choice of Science and Engineering Major for Asian Ethnic Groups

	Model 1	Model 2	Model 3	Model 4	Model 5
Ethnicity (white excluded)					
Chinese	2.087**	1.531*	1.493	1.030	0.903
Filipino	2.668**	2.315**	2.178**	2.037**	2.055**
Japanese	1.344	1.394	1.478	1.370	1.225
Korean	1.721**	1.311	1.126	1.068	0.939
Southeast Asian	2.369**	2.276**	1.941**	1.636	1.644
South Asian	3.948**	3.491**	2.878**	2.130*	1.898
Other Asian	1.615*	1.348	1.422	1.646	1.548
Generation (third excluded)					
First		1.118	0.999	0.991	1.022
Second		1.288*	1.265*	1.167	1.095
SES Index		0.936	0.932	0.937	0.934
Math Attitude					
Look forward to math class			1.053	1.013	1.023
Afraid to ask questions			1.015	1.110	1.223*
Math will be useful			1.361**	1.461**	1.428**
Always done well in math			1.835**	1.629**	1.311**
Coursework					
Advanced English				1.065	1.086
Advanced math				1.152	1.146
Algebra at 8^{th} grade				1.053	0.866
Algebra 1 at 10^{th} grade				1.023	1.008
Geometry at 10^{th} grade				1.625**	1.192*
Algebra 2 at 10^{th} grade				1.290**	1.050
Trigonometry				0.944	0.895
Pre-calculus				1.404	1.463
Calculus				0.684	0.822
Standardized Math Score					1.054**

The model includes all the missing flags.

***p<.01 *p<.05*