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Direct all correspondence to Airan Liu (airanliu@umich.edu) or Yu Xie (yuxie@umich.edu), Population Studies Center, Institute for Social Research, 426 Thompson Street, University of Michigan, Ann Arbor, MI 48106. This study draws on survey data from the Education Longitudinal Survey 2002 (ELS) conducted by National Center for Education Statistics (NCES).

Abstract

We advocate an interactive approach to examining the role of culture and SES in explaining Asian Americans' achievement. We use Education Longitudinal Study (ELS) 2002 baseline data to test our proposition that the cultural orientation of Asian American families is different from that of white American families in ways that mediate the effects of family SES on children's academic achievement. The results support our hypothesis, indicating that: (1) SES's positive effects on achievement are stronger among White students than they are among Asian-Americans; (2) the association between a family's SES and behaviors and attitudes are weaker among Asian-Americans than among Whites; (3) a fraction of the Asian-white achievement gap can be accounted for by ethnic differences in behaviors and attitudes, particularly ethnic differences in family SES's effects on behaviors and attitudes.

Introduction

Given their higher socioeconomic success compared to other U.S. minority groups and the population at large, Asian Americans have been characterized as a "model minority." At younger ages, this difference is manifest in Asian Americans' relatively high levels of school performance and educational attainment (Chan 1991; Kao 1995). Recent statistics show that, relative to U.S. whites and other racial/ethnic groups, Asian Americans achieve higher test scores and obtain better grades (Hsia 1988; Caplan et al. 1991; Sanchirico 1991; Zhou & Bankston 1998; Kao 1995; Fejgin 1995; Hsin & Xie 2014); and they are more likely to complete high school and college, to obtain postgraduate degrees, and to attend first-tier universities (Xie & Goyette 2003; Lee & Zhou 2014). As educational achievement is highly correlated with labor market outcomes, Asian Americans' academic achievement is viewed as an important factor in their later career success, and thus has been of interest to scholars in social stratification.

Research has established two main explanations for Asian Americans' premium in academic achievement. The first one focuses on their advantage in structural resources. Because family socioeconomic status (SES) is perhaps the most important predictor of children's academic achievement (e.g., Duncan, Featherman & Duncan 1972), the relatively high levels of education and income achieved by recent Asian American immigrants is viewed as an advantage in the provision of educational resources in the home for their children (e.g., Kao 1995; Sun 1998; Sakamoto and Furuichi, 1997, 2002). However, studies have found that family SES alone does not fully account for Asian Americans' higher levels of educational achievement (Goyette & Xie 1999; Kao 1995), and, in particular, that it does not explain the academic achievement of children whose parents immigrated from Southeast Asian countries, most of whom arrived with low levels of human capital and economic resources.

The second explanation emphasizes the role of culture. Some scholars have argued that Confucianism exerts an influence on the (Wong 1990; Schneider & Lee, 1990, Nagasawa & Espinsoa, 1992; Stevenson & Stigler, 1992; Barringer et al. 1993; Jimenez & Horowitz, 2013). Others have posited that the selectivity of recent Asian immigrants to the U.S. contributes to their strong belief and optimism in the value of education for social mobility (Sue, 1990; Kao & Tienda 1995; Xie & Goyette 2003).

Most studies have examined Asian Americans' achievement by treating SES and culture as two discrete factors. Implicit in this approach is an assumption that SES and culture influence

Asian Americans' achievement in an additive way. However, the effects of family SES on children's educational achievement may not be comparable across Asian American and other groups; it may vary due to cultural factors, making SES and culture interactive rather than additive in their impact. In this paper, we propose that the cultural orientation of Asian Americans compared to that of white Americans acts as a moderating factor in the effects of SES on educational achievement. Qualitative research indicates that even Asian American children from disadvantaged family backgrounds enjoy the Asian premium in academic achievement (e.g., Lee and Zhou, 2014), which suggests that access to more and better home resources is not the key to their success. We conjecture that SES has weaker effects on academic achievement for Asians than for whites in the U.S. If this is true, the achievement difference between Asian Americans and whites will be greater at low than at high levels of SES.

Our study fills a gap in the current literature by examining the heterogeneous effects of family SES on children's academic achievement across Asians and whites in the U.S. We argue that the weaker association of SES and achievement among Asian Americans relative to whites epitomizes cultural differences and accounts for much of the observed overall achievement gap. To test our hypotheses, we analyze data from the 2006 Educational Longitudinal Studies (ELS).

Family SES vs. Culture: Two Explanations for the Asian-White Achievement Gap

Currently, there are two main sociological explanations to the achievement differences between Asian-Americans and Whites. The first explanation attributes Asian-Americans' academic success to the socioeconomic, or the structural, advantage of their families and parents. Though most immigrants from Asia to the U.S. prior to World War II arrived to fill low-wage, low human capital labor needs, changes since then in immigration laws and in demand for scientific and technical personnel mean that more recent Asian immigrants are likely to be well-trained professionals (Cheng and Bonacich 1984; Nee and Wong, 1985). While this selection may contribute to the educational achievement of these Asian American immigrants' children (Barringer et al., 1993, p. 167), it fails to account for the high levels of achievement among children whose parents immigrated from Southeast Asian countries (Vietnam, Laos, and Cambodia), often arriving with little economic or human capital. In addition, recent studies have found that academic differences between white and Asian American children persist even after

controlling for family structural characteristics such as parental education, household income, and family composition (Harris, Jamison, and Trujillo 2008).

The view that Asian Americans' advantage in educational achievement is rooted not so much in family SES as in the high value placed on education in Asian cultures has found traction in recent studies. Researchers have presented evidence that Asian American immigrants carry their home country's pro-educational cultural values with them, and that these beliefs shape their daily home practices to the educational advantage of subsequent-generation Asian Americans (Portes and Zhou 1993; Zhou and Bankson 1994; Portes and Fernandez-Kelly 2008). For example, evidence indicates that, compared to parents in other U.S. racial/ethnic groups, Asian American parents are more highly motivated to make sacrifices for their children's education, to put more emphasis on educational effort and attainment, and to have higher standards for children's academic achievement after controlling for SES (Sun 1998; Wong 1990; Crowyn and Bradley 2008; Schneider and Lee 1990). Other studies find that Asian American students tend to have stricter work ethics and higher educational aspirations than students in other U.S. race/ethnic groups (Hsin & Xie 2014).

Dissecting Culture's Effects: Intercept Effects and Interaction Effects

Most of the current studies treat structural, or socioeconomic, factors and cultural factors as two competing explanations to Asian-Americans' achievement. A typical research strategy for gauging effects on educational achievement across racial/ethnic/ immigrant groups in the U.S. has been to disentangle structural (SES) from cultural factors (values, beliefs). This approach, which generally relies on multiple regression analyses to separate out the effects of one factor by controlling for the others, is known as statistical adjustment. It implicitly assumes that the effects of structural factors and cultural factors are additive, with cultural factors represented by differences in the intercept by racial/ethnic/ immigrant groups, i.e., intercept effects. That is, by controlling for structural differences, it tests whether Asian Americans have an overall advantage in academic achievement because they have higher SES. The achievement differences that remain after controlling for SES characteristics are interpreted as suggestive of cultural effects (e.g. Kao & Tienda, 1998; Hao & Bonstead-Bruns, 1998; Goyette & Xie, 1999; etc.). This way of measuring cultural difference is also called the residual approach, which is a conventional method for studying group differences in social science (Cole 1979). However, we argue that

cultural differences can lead to achievement differences that the residual approach cannot fully capture or characterize.

The additive, i.e., intercept, approach assumes: (1) the effects of SES on achievement are the same for whites and Asian Americans, and (2) the effects of cultural differences on achievement are constant across SES levels. In other words, it hypothesizes that cultural effects and SES effects are discrete and parallel to each other, and can be added together to explain Asian American's achievement advantage. Graphically speaking, the additive approach assumes either A or B in Figure 1 is true.

Few studies have examined the additive approach assumptions empirically. If these assumptions are violated, the statistical adjustment strategy will not adequately characterize the achievement difference between Asian Americans and whites. For example, Asian-white achievement differences may be negligible at high SES but large at low SES. If this is true, even when the two groups have identical SES distributions, Asians would still have an advantage (see C and D in Fig 1). Also, it is possible that cultural factors work in an interactive than a parallel way with structural factors to generate the achievement difference. Therefore, it is important to examine achievement differences between Asian Americans and whites across SES levels, which will allow a more accurate identification of the sources of these differences.

In this study, we bisect cultural effects on the Asian-white educational achievement gap into the intercept (or residual) effect and the interaction effect, with a particular emphasis on the latter. In this case, the intercept effect is the intercept difference between the Asian and white groups captured by the coefficient of race after statistical adjustment. The interaction effect refers to cultural difference in the strength of the association between family SES and the outcome variable of educational achievement. This approach gauges the total cultural effect on the achievement gap via a combination of intercept and interaction effects. The traditional approach, which accounts only for intercept effects, cannot assess the differential Asian-white role of culture in SES effects on achievement.

Broadly speaking, four potential scenarios may explain the observed Asian-white academic achievement gap (Figure 1). The first possibility is that achievement advantage is rooted in structural differences in family SES between Asian Americans and whites, with Asian Americans more densely distributed around high SES levels (A in Figure 1). The second possible scenario is that in addition to the achievement difference due to the Asian-white SES

distributional differences, Asian Americans maintain a culture-based achievement premium throughout the entire SES distribution (B in Figure 1). This is what the additive approach implicitly assumes – that the effects of culture factors on Asian's academic premium can be added to the effects of structural factors independently. The third possibility is that the effects of SES on achievement are stronger for Asian Americans than for whites, resulting in a smaller achievement gap at the lower end of the SES distribution than at the higher end (C in Figure 1). The fourth possibility, which is what we test here, is that the effects of SES on achievement are weaker for Asian Americans than for whites, resulting in a larger achievement gap at the lower end of the SES distribution than at the higher end (D in Figure 1).

If either the third or fourth scenario reflects reality, the additive approach will not give an accurate picture of the Asian American-white achievement gap. Furthermore, if the fourth scenario is supported by the data, it undermines the position that the Asian American educational achievement advantage emanates from greater family socioeconomic resources. Rather, it suggests the need to identify other factors differentially associated with culture account for Asian-Americans' achievement, and rethink the mechanisms leading to their academic success as a group. This will broaden our understanding of Asian-American's achievement and yield both important theoretical and policy implications.

Our work examines whether and how structural and cultural factors work interactively to give rise to the achievement gap. By estimating both the intercept and the interaction effects, this analysis aims to more accurately identify the factors contributing to the Asian American-white achievement difference, and, more broadly, further explicate the causal mechanisms behind educational achievement in the U.S.

Sociological Significance of Culture as an SES Moderator

Why might SES have different impacts on academic achievement for Asian Americans and whites? To answer this question, we need to take a step back and think about the mechanisms through which SES influences one's achievement.

Past research offers potential explanations. Ever since Blau and Duncan's (1967) pioneering empirical work found a high correlation between occupational attainment and family social standing, sociological scholars have set out to find out reasons for this association. The Wisconsin Model, developed by Sewell and his colleagues (e.g., Sewell, Archibald, and Portes

1969), elaborates and extends the basic Blau-Duncan model by incorporating social psychological factors, such as attitudes and aspirations, in explaining the association between family SES and achievement. Basically, the Wisconsin Model posits that family SES affects children's achievement by influencing their attitudes and behaviors.

Recent advancements in social science research have provided further support for this model by extending our understanding of the role of attitudes and behaviors in social stratification and achievement. For example, sociological studies have found that social-emotional attributes such as valuing hard work and having high aspirations are closely tied with children's success at school (Hsin & Xie, 2014); and that socio-psychological pathways are key in transmitting parental characteristics to children, particularly by effecting children's educational outcomes (Zeng & Xie, 2014).

Fruitful findings from other social science disciplines also shed light on the significance for cognitive and academic performance of social-psychological attributes such as motivation, locus of control, aspiration, and self-discipline. For instance, psychological studies of academic performance have shown that traits like self-discipline can make up for shortcomings in IQ (Duckworth & Seligman 2005, 2006); while economic studies have documented that motivation and preference influence performance in cognitive and academic tests (Borghans, Meijers & Wheel 2008; Heckman, 2006; Claessens, Duncan & Engel 2009. Given this body of work, it is reasonable to assume that family SES influences children's achievement, at least in part, by shaping their attitudes and behaviors.

Other studies suggest the important influence of culture on the development of attitudes and behaviors. Sociologists have shown that culture influences individuals' choices by shaping both their goals and their strategies for goal achievement (Hitlin and Piliavin, 2004; Kaufman 2004; Swidler 1986; Vaisey 2008). Specifically, research indicates that people from different cultures tend to be equipped with "repertoires" of culture-specific decision sets and behavioral strategies (Swidler 1986; DiMaggio 1997). One implication of these cultural repertoires that is salient to our analysis is that, when facing the same situation, people from different cultures may respond in very different ways even if they have a similar socioeconomic background. In other words, it is possible that culture mediates the relationship between SES and decision making, leading to a varying relationship across different cultural groups.

Together, these findings provide evidence that the role of culture for Asian Americans may be different from the role of culture for whites in shaping the relationship between SES and the behaviors and attitudes associated with academic achievement. If this is true, what are some of the cultural attributes that may contribute to this difference? Numerous studies in cultural psychology have shown that the East Asian concept of 'self' views individuals as more malleable than does the Western Caucasian concept of self (cf. Chiu, Dweck, Tong, & Fu, 1997, Study 5; Heine, Steven, 2001; Nisser, U., G. Boodoo, et al. 1996). In East Asian cultures, individuals are expected to achieve certain social outcomes through molding themselves (Morling, Kitayama, & Miyamoto, 2002). Also, it is widely believed in East Asia that that achievement is a function of consistent practice and single-minded efforts rather than inborn ability or family origins. Add to these beliefs the strong emphasis Confucianism places on education and efforts-based achievement, and it is not surprising that many East Asians believe that children from a disadvantaged social background are capable of success that equals that of their peers from a superior social background, as long as they are willing to put in persistently strong efforts. In particular, many Asians subscribe to the notion that social mobility can be obtained through education (Stevenson & Stigler, 1992; Chen & Stevenson, 1995). Though these beliefs originated in East Asia, it is possible they have spread to other Asian ethnic groups in U.S. (Hao & Bonstead-Bruns 1998; Lee & Zhou, 2014).

The strength of SES effects on attitudes and behaviors may also be tempered for Asian Americans by the forces of selectivity in international immigration. Immigrants, a self-selected group of people who often have high motivations to achieve, are likely to expect upward mobility for themselves or their offspring in the receiving country even if they start low on the socioeconomic ladder (Ogbu 1991; Kao 1995). Such optimism may translate into resourceful and strategic behavior designed to overcome obstacles and advance social status. It may also transmit to the children of immigrants in expectations of upward social mobility via high academic achievement, regardless their social background (Caplan, Choy, and Whitmore, 1992; Zhou and Bankston 1988).

Another cultural factor to consider is that, as argued by Sue (1990), Asian-Americans who may face disadvantages in pursuing social status through other means, view education as an equal-opportunity, objectively measured and valued means of upward mobility – a means that

may have particular salience for Asian American families in low-SES situations (Xie and Goyette 2003).

Another side-effect of Asian American culture that may weaken the impact of SES on academic performance is the U.S. stereotype of Asian Americans as high achievers (Jimenez & Horowitz, forthcoming; Lee & Zhou, 2014). This stereotype, although emanating from cultural characteristics, may magnify the culture-based expectations of Asian American parents and children for high levels of success in relation to people with loftier social standing, to native-born Americans, and to other Asian Americans. As this stereotype is mainly based on ethnoracial category rather than family background, every Asian student, regardless their socioeconomic status, is likely to be influenced by it.

Given the evidence above, we propose that the association between SES and educational achievement is weaker for Asian Americans than for whites. Our analyses empirically test Asian-white differences in the effects of family SES on not only academic achievement but also behaviors and attitudes affecting achievement. This approach allows us to better evaluate the role of culture in explaining the achievement gap between Asian Americans and whites, and to better assess its contribution relative to SES.

Data and Measurements

Our statistical analyses draw data primarily from the Education Longitudinal Study (ELS) of 2002. Conducted by the National Center for Education Statistics (NCES), the ELS is a nationally representative longitudinal survey of U.S. high school students with a two-stage sampling design: in the 2002 baseline survey, 750 schools were selected, and then about 15,000 10th-grade students were selected randomly from all the schools. In addition to surveying students, the 2002 ELS surveyed parents, math and English teachers, school principals, and the heads of school libraries or media centers, asking questions about students and parents' beliefs, attitudes, and behaviors, as well as students' daily behaviors in school (reported by their teachers). Also, the ELS oversampled Asian students, which makes white-Asian group comparisons possible for this analysis. Our sample is restricted to whites and Asian students whose parents completed the questionnaire and were enrolled in schools with both whites and Asians present. This yields an analytical sample of 8,978 students.

We use multivariate imputation to deal with all missing values from ELS variables of interest, which are described in Table 1. The dependent variables are scores on a standardized mathematics test, scores on a standardized reading test, overall GPA in the 10th grade, and academic GPA in the 10th grade. Math test score, measured by the IRT T-score provided by NECS, is a standardized transformation of the IRT ability estimates based on the population, and is the key dependent variable throughout our main analysis as it provides a more objective and norm-referenced measurement of a student's academic achievement.

As for demographic control variables, we include student's gender, family SES, immigrant generation, intact family (1= lives with both mother and father), number of siblings, and ever held back in school (1= held back). Family SES, an index constructed by NCES, is a composite based on mother's and father's education, both parents' occupations, and family income, with each component equally weighted. It is standardized with a mean of 0 and a standard deviation of 1 for the entire sample[1] (NCES 2002).

We use five variables to measure student behaviors and attitudes toward education and academic achievement. *Hard Working* measures level of perseverance and effort from two questions self-rated by students on a four-point scale (1= almost never, 2= sometime, 3= often, and 4= almost always): How often do you work as hard as possible when you study? How often do you do your best to learn what you study? We average the ratings for the two questions for a composite score ranging from 1 to 4, with a higher score indicating higher self-rated effort. *Importance of Good Education* is measured using student ratings of this from 1 to 3, with a higher score indicating a greater value (1= not important, 2= somewhat important, 3= very important). *Students' Education Expectation* and *Parents' Education Expectation* (for their children) are measures coded as expected years of schooling: less than high school graduation =11; high school graduation or GED only =12; attend (or complete) 2-year college or attend college with incomplete degree =14; graduate from college =16; obtain master's degree or equivalent and above =18. Finally, *Behavior in Math Class* is math teachers' rating on a five-point scale of students' classroom behaviors[2] based on questions about how often (1= Never, 2= Rarely, 3= Some of the time, 4= Most of the time, 5= All of the time) the student (1) completes homework, (2) is absent from class, (3) is attentive in class, and (4) is tardy for the class. We

[1] As family's SES is constructed from both parents' education, occupation, and family's income, we do not take separate measurements on these as controls in our analysis.
[2] As our key dependent variable is math standardized test score, we use math teacher's evaluations on classroom behaviors.

average the ratings for all questions for a composite score from 1 to 5, with a higher value indicating more disciplined behavior.

Descriptive Results

Table 2 presents the summary descriptive statistics for the entire sample and separately for Asian American and white students. First, although we find that Asian Americans do not enjoy an SES advantage over whites (the average SES index score is 0 for Asian Americans and 0.25 for whites), they do evidence an achievement premium over whites in their scores on the math standardized test, overall GPA, and academic GPA. Asian American students have lower scores on the standardized reading test, which for many may be influenced by their status as first-generation Americans.

Asian Americans and whites also differ in behaviors and attitudes related to education. Compared to white students, Asian American students give themselves a higher self-rating for hard work and they place higher value on a good education. Asian American students and parents hold higher expectations for educational attainment than their white counterparts. And math teachers rate Asian American students higher in disciplined class behavior than they do whites.

In short, the descriptive statistics in the study are consistent with prior literature on Asian Americans' educational achievement advantage. Moreover, the summary statistics indicate that family SES is not an adequate explanation for Asian American students' higher academic achievement.

Regression Analyses

To test our hypothesized explanations for Asian American advantage, we use regression analysis with a school-level fixed-effects model to fully control for a school's characteristics. First, we examine whether or not the effects of family SES on educational achievement measures differ between Asian American's and whites. Second, we analyze, as pathways linking family SES and academic outcomes, how family SES affects measures of students' behaviors and attitudes and parents' attitudes differentially for Asian Americans and whites. Third, we examine the relationship between these behavioral/attitude measures and students' academic achievement. In

particular, we are interested in whether the observed Asian-white differences in behaviors and attitudes account for the Asian-white achievement gap. We further carry out a counterfactual analysis to answer the following question: To what degree do the Asian-white differences in how family SES affects school-related behaviors/attitudes account for the observed Asian-white achievement gap?

3.1 SES, Ethnicity and Academic Achievement

Figure 2 depicts the relationship between family SES and academic achievement for Asian Americans and whites. The steeper slope for the whites indicates a stronger positive effect for SES on achievement. The different inclinations of the fitted lines, together with Asian Americans' greater value in the intercept of the regression line, indicate that the Asian-white achievement gap varies across family SES levels – being greater at the lower than the upper end of the distribution.

Table 3, which presents the estimated coefficients for regression models corresponding to Figure 2, demonstrates how basic demographic control variables and the interaction between race and family SES explain the Asian-white achievement differences. Model specifications are the same across the four models, with varying dependent variables of academic achievement.

The negative and significant coefficients of the interaction terms of family SES and Asian race in Model 1 (math test as the achievement outcome variable), Model 3 (overall GPA as the achievement outcome), and Model 4 (academic GPA as the achievement outcome) verifies that the positive effects of SES on achievement are weaker for Asian American than for white students. Though the insignificant negative interaction term in Model 2 (reading test as the achievement outcome) does not align well with our hypothesis, it may be impacted by the immigrant background of the Asian American students, as discussed above. In general, all results support our hypothesis that SES affects educational achievement less strongly among Asian Americans than whites.

3.2 SES, Ethnicity and Behaviors and Attitudes

Figure 3 depicts the relationship between family SES and measures of behaviors/attitudes regarding education for Asian Americans and whites. The patterns of the relationship between SES and behaviors/attitudes in Figure 3 are similar to those in Figure 2: the fitted line is less inclined and the intercepts are greater for Asian Americans than for whites. The differences in

slope and intercept indicate that the Asian-white advantage in behaviors/attitudes is greater at lower than higher levels of family SES. In fact, at very high SES levels, whites gain the advantage in measures of parent and student education expectations.

Table 4 presents the results from regression analyses corresponding to Figure 3. The five models in Table 4 have the same specification with different outcome variables for attitudes/behaviors. As highlighted in the table, the interaction term of race and family SES is negative and significant across all the five models. These results support our hypothesis of a weaker effect for SES on behaviors/attitudes among Asian Americans.

3.3 Behaviors, Attitudes, and Achievement Difference

To better understand how behaviors and attitudes will influence academic achievement, and the extent to which Asian American-white difference in the association between SES and these measurements will account for the observed Asian-white achievement difference, we first turn to regression analysis and further carry out a counterfactual analysis. We elect to use scores on the math standardized test as our main dependent variable for this part of the analysis,[3] viewing it as the most objective and comparable measure for student achievement. Table 5 shows the results from this analysis.

The interaction term of family SES and Asian race is included in all of the seven models, and their corresponding p-values are reported at the bottom row of the table for each model.[4] The first model in Table 5 is the baseline model, with just demographic control variables. In Models 2 to 6, we add the five behavior/attitude measures separately. Model 7 is the full model, including demographic controls and all the five behavior/attitude measures. The Asian American premium in academic achievement is 1.45 in the baseline model and is statistically significant. In Models 2 to 6, both the magnitude and the significance of the premium decrease as we add measures into the models. In Model 7, the full model, the Asian American premium decreases to 0.3, or to one fifth of its magnitude in the baseline model, and is no longer significant. The increasing p-values indicate that the significance of the interaction of race and family SES also fades gradually across Models 1 to 7, becoming insignificant in the full model.

[3] Similar results are obtained using overall GPA and academic GPA as the outcome variables. These results are presented in Appendix.

[4] We do not present the coefficient of the interaction in the table due to the space limitation.

These changes across models have several implications. The measured behaviors and attitudes are important correlates of students' academic achievement, and seem to be the main pathways for conveying the Asian American achievement premium. Further, not only do Asian Americans' higher scores in these academic achievement-related behaviors and attitudes contribute to their academic advantage, but the weaker association between family SES and these behaviors/attitudes among Asian Americans moderates the direct effect of family SES on their academic achievement – as evidenced by the larger Asian American-white achievement gap at lower SES levels.

To generate a more straightforward illustration of how the Asian-white difference in behaviors/attitudes, and especially in the relationship between family SES and behaviors/attitudes, can help explain the Asian American-white achievement difference, we carry out a counterfactual exercise. The results are displayed in Figure 4.

The predicted achievements for Asian Americans and whites are calculated based on the full model (Model 7) in Table 5, and the five models in Table 4. First, we predict Asian and whites' behaviors and attitudes from models in Table 4 using the grand sample mean on all the variables other than Asian race and Asian race-SES interaction. Then, holding all the control variables constant other than race and race- -SES interaction with grand sample mean, we enter the predicted behaviors and attitudes into Model 7 to predict the achievement for Asian Americans and whites. By suppressing the potential differences caused by Asian-white variation in other socio-demographic factors, we are better able to observe how the Asian American-white differences in behaviors/attitudes influence the achievement gap.

We further construct the counterfactual achievement score for whites from Model 7 in Table 5 by using similar methods as above and replacing whites' predicted score on the behaviors/attitudes with Asian-Americans' score. The counterfactual score for whites can thus be interpreted as what the score looks like if white students and their families behave in exactly the same way as their Asian peers. Specifically, it helps project white students' achievement under the condition that the effect of family SES on behaviors/attitudes declines to the level observed for Asian Americans.

Figure 4 depicts a notable difference in the predicted achievement of Asian-Americans and whites. Given the method used to calculate the predicted achievement, the Asian American premium persists regardless of Asian-white differences in family background variables. This also

supports our hypothesis that their achievement advantage is not completely dependent on their socioeconomic background. And once again, the steeper slope of the fitted line for whites indicates a tighter relationship between family SES and achievement for whites than for Asian-Americans.

We also note in Figure 4 that the gap between whites' counterfactual achievement and Asian Americans' predicted achievement is much smaller than the observed Asian American-White gap in predicted achievement. One major explanation for this discrepancy is the significant increase in Whites' counterfactual achievement at the lower SES distribution if Whites resembled Asian Americans in the relationships between family SES and schooling-relevant attitudes and behaviors. In other words, the gap between Asian Americans and Whites shrinks if White's achievement becomes less dependent on SES.

We are thus led to conclude that the Asian American-white differences in behaviors/attitudes, particularly in the strength of the effect of family SES on behaviors/attitudes, account for much of the observed Asian American-white achievement difference. In other words, Asian Americans enjoy a persistent achievement premium not only because they score higher in behaviors and attitudes important to academic achievement, but also because these behaviors and attitudes depend less on their family SES.

Sensitivity Analysis

Are the results in our analysis particular to Asian Americans or generalizable to other groups? Answer to this question will illuminate us on whether the moderated relationship between family SES and achievement among Asian Americans roots in Asian-specific culture or shared by other immigrants as well. To help answer this, we conducted a sensitivity analysis by replicating the regression analysis using Hispanic and white student subsamples. Appendix Table A-2.1 presents the results (as specified in Table 3) with achievement measures as the outcomes, and appendix Table A-3.1 presents the results (as specified in Table 4) with behavior/attitude measures as the outcomes.

Specifically, for standardized math and reading test scores (Model 1 and Model 2 in Table A-2.1), the interactions between family SES and race are negative, but not significant. For overall GPA and academic GPA, the interactions are negative and significant. In addition, the interaction terms are significantly negative across all the five behavior/attitude measures. All of

these results indicate that, as we found for Asian Americans, family SES has less influence on Hispanic students' academic achievement and related behaviors/attitudes than it does on whites'.

However, unlike for Asian Americans, the moderated SES effects do not consistently yield Hispanic advantage across all measures. As what we have discussed, a group's residual differences are the product of both intercept effects and interaction effects. With negative intercept effects in many of the models for Hispanic students, the negative interaction effects, though they moderate the impact of SES, exacerbate their disadvantage in achievement and behaviors in math class.

In sum, the moderated relationship between family SES and students' achievement, behaviors, and attitudes is not restricted to Asian Americans. However, compared with Asian Americans, findings for Hispanics are mixed and less consistent. In particular, the moderated relationship for Hispanic students does not yield a significant premium over white students, and sometimes exacerbates their disadvantage instead.

As discussed, the literature suggests that East Asian cultures have been deeply influenced by Confucian culture, advocating the concept of "self-malleability" and emphasizing education as a pathway to social mobility – values that help East Asian students achieve academic success regardless of their social origins (Peng and Wright, 1994; Stevenson & Stigler 1992, etc.). The literature also indicates that Asian Americans encompass a heterogeneous group with Asian ethnic groups tending to vary in cultural values and behavior patterns (Goyette & Xie 1999). To gauge how well our results can be generalized across Asian American subgroups, we conducted a sensitivity analysis by replicating the regression results and dividing Asian American students into two groups, East Asian (China, Japan, Korea) and Other Asian (Filipino, Southeast Asian, and South Asian),[5] with white students as the reference group. Appendix Table A-2.2 presents the results (as specified in Table 3) with standardized math and reading scores and the two GPAs as the measures for academic achievement. In Model 2, with the standardized math test score as the outcome, the interaction between Asian group and SES is significantly negative for students from the Other Asian group; however, different from East Asian students, the coefficient for Other Asian is also significantly negative. This suggests that, like Hispanic students, the moderated association between SES and achievement exacerbate Other Asian students' disadvantage to white students. In Models 3 and 4, where the outcomes are GPA measurements,

[5] East Asian includes Chinese, Japanese, and Korean; other Asian includes Filipino, Southeast Asian, and South Asian. The sub-Asian ethnicity identification is provided by the ELS 2002 data.

East Asian students and Other Asian students have similar patterns in the results. Specifically, the coefficients for ethnicity are significantly positive, while the coefficients for the interaction of SES and ethnicity are negative and significant. Appendix Table A-3.2 presents the results (as specified in Table 4) with measures for behaviors/attitudes as outcomes. With few inconsistencies, the signs, significance, and magnitude of the coefficients for the interaction of ethnicity and SES are comparable between East Asian and Other Asian subgroups across all the models. The coefficients for ethnicity are also similar. These results indicate that we cannot differentiate group differences within these two broad categories of Asian Americans, and they suggest that culture's effects on achievement are similar for all Asian American students.

Discussion and Conclusion

Numerous studies have characterized Asian Americans as a "model minority," owing to their attainment of high socioeconomic status (SES), and particularly their advantage in academic achievement (Hsia 1988; Caplan et al. 1991; Sanchirico 1991; Zhou & Bankston 1998; Kao 1995; Fejgin 1995; Hsin & Xie 2014). Sociological research so far has proposed two explanations for these observed premiums. The first explanation attributes Asian American's academic advantage to their more advantaged family background measured by SES, while the second explanation emphasizes the role of the education- and effort-oriented culture shared by Asian Americans. However, most past studies have treated these two explanations as competing with one another. In other words, they have assumed, albeit sometimes implicitly, that SES and culture influence Asian Americans' achievement additively and independently.

In this paper, we advocate an interactive rather than an additive approach to examining the role of culture and SES in explaining Asian Americans' achievement. We propose that Asian American families have a different cultural orientation from white families that moderates the way family SES affects children's academic achievement. Our analyses indicate that such differences partly explain the observed achievement gap between Asian American students and white students. Thus, our study fills the gap in the current literature by examining the potentially heterogeneous effects of SES on the achievement gap between Asian Americans and whites from a cultural perspective.

We test the hypothesis that Asian-white differences in the association between SES and achievement are products of race-based differences in the association between SES and social

behavioral factors – manifest here as measures of behaviors and attitudes deemed important to academic success. We find that the positive effects of family SES on achievement are stronger among white than Asian American students, and that the association between SES and behaviors and attitudes are weaker among Asian-American than among white students. Furthermore, our counterfactual analysis reveals that a decent amount of the achievement difference can be accounted for by Asian American-white differences in behaviors and attitudes, particularly differences in the effects of family SES on behaviors and attitudes. All these findings support our argument that Asian Americans' behaviors and attitudes are less influenced by family SES than are whites and that this difference helps generate Asians' premium in achievement – especially evident at lower levels of family SES.

Our findings yield policy implications as well, suggesting that differences in social behavioral characteristics, which are important for achievement, will lead to achievement differences. However, these social behavioral skills are not rigidly determined by family SES, and the extent to which they are associated is malleable. This opens up the possibility of eliminating the achievement gap between different social groups through non-monetary channels – by instead working to encourage the social behaviors and attitudes that help determine academic success.

Still, we concede that the results from our study are only sugguestive. One limitation is that we cannot yet uniquely attribute the explanation of our findings to the Asian culture and an immigration culture in general. Given that our sensitivity analyses suggest that the weaker association between family SES and achievement is not restricted to Asian students but also Hispanic students, it is possible this pattern is characteristic of an optimistic immigrant culture rather than of the Asian culture per se (Gibson & Ogbu 1991; Kao 1995; Caplan, Choy, and Whitmore 1992). However, the moderated relationship does not provide Hispanic students with an academic premium as it does for Asian American students.

In addition, we cannot attribute the Asian-White differences in the effects of SES to solely Confucian culture, as the moderated SES effects are also observed among Other Asian students besides East Asian students. One possible explanation for this homogenous pattern is that Asian American students, regardless of their specific ethnicity, feel pressured to live up to the Asian achievement stereotypes (Jimenez & Horowitz, 2013; Lee & Zhou, 2014). However, the answer to this question is beyond the scope of the current study.

Understanding the achievement difference between Asian American and white students will not only give us better clues about how one immigrant group has attained social mobility in the U.S., but it will also provide deeper insights into broader racial/ethnic inequalities in the U.S.. Our findings underline the need to examine culture's role in generating group achievement differences, and to examine how culture works interactively with other traditional socioeconomic characteristics to influence children's development.

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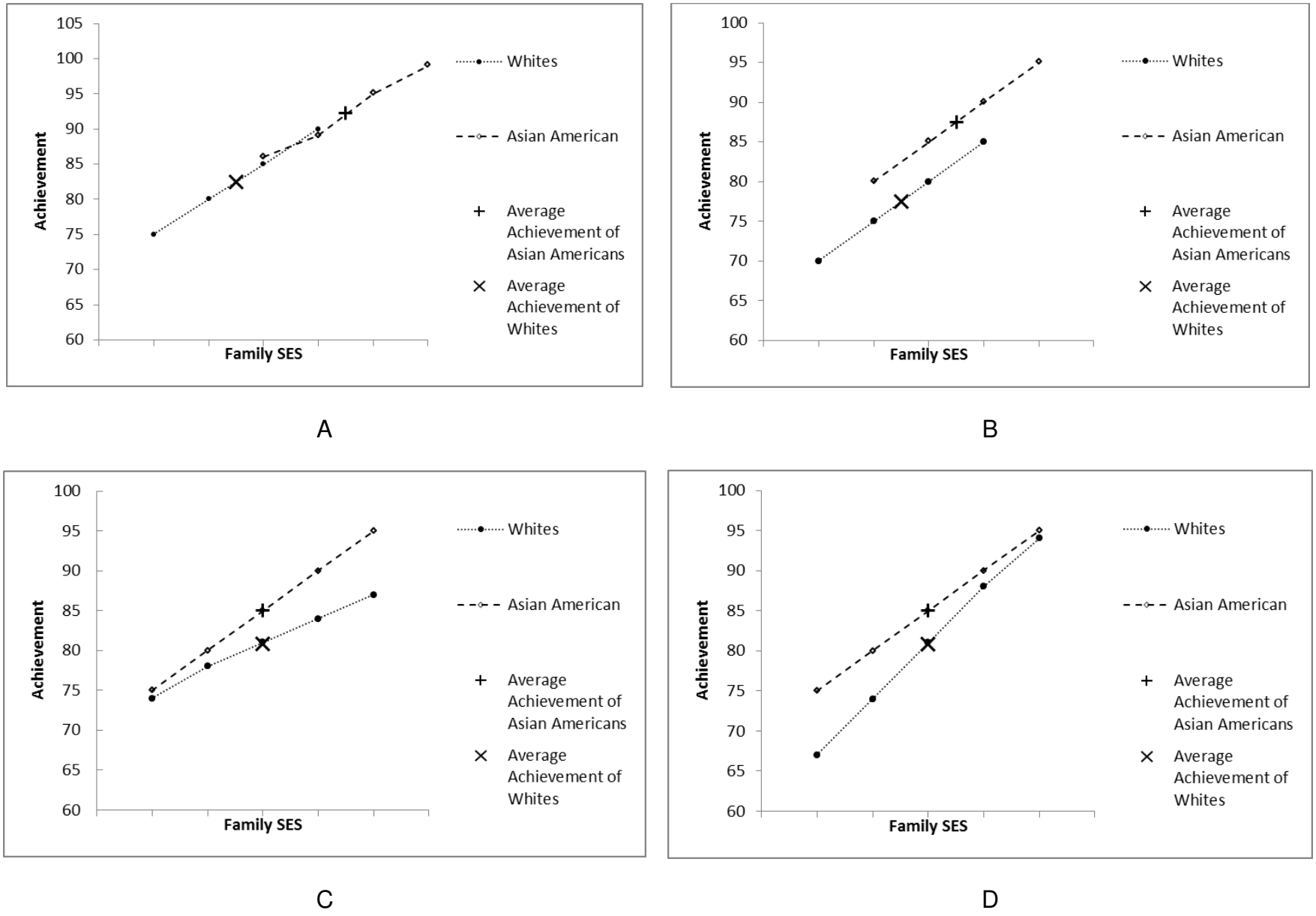
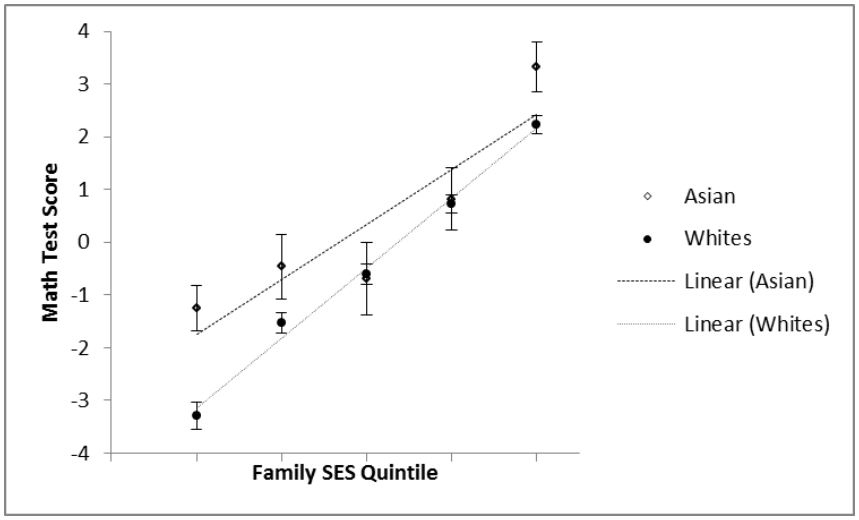
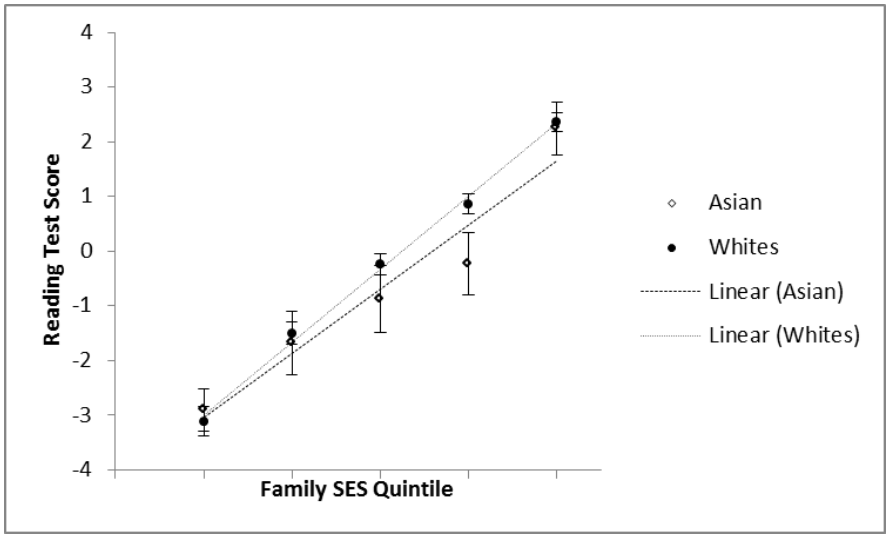


Figure 1. Four Possibilities of Family Socioeconomic Status and Achievement Difference (Adjustment has been made for School Effects)



(1) Math Standardeized Test Score



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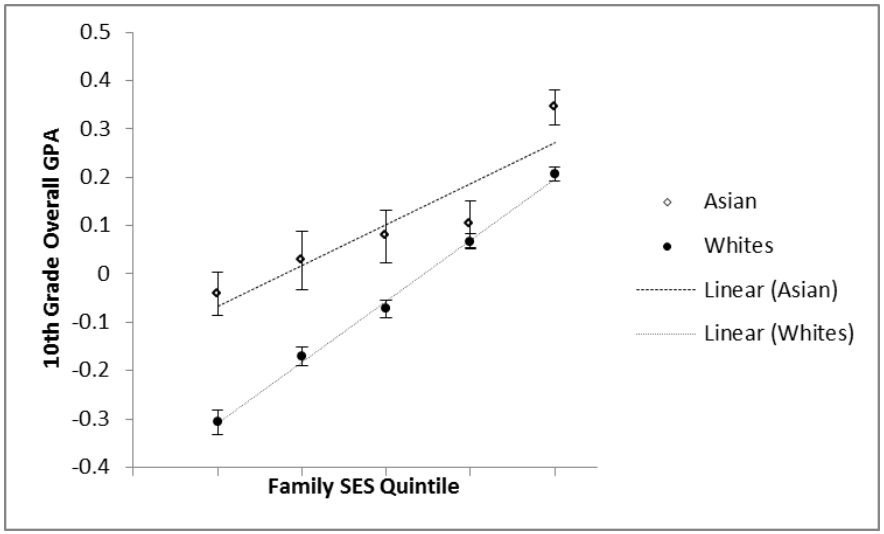
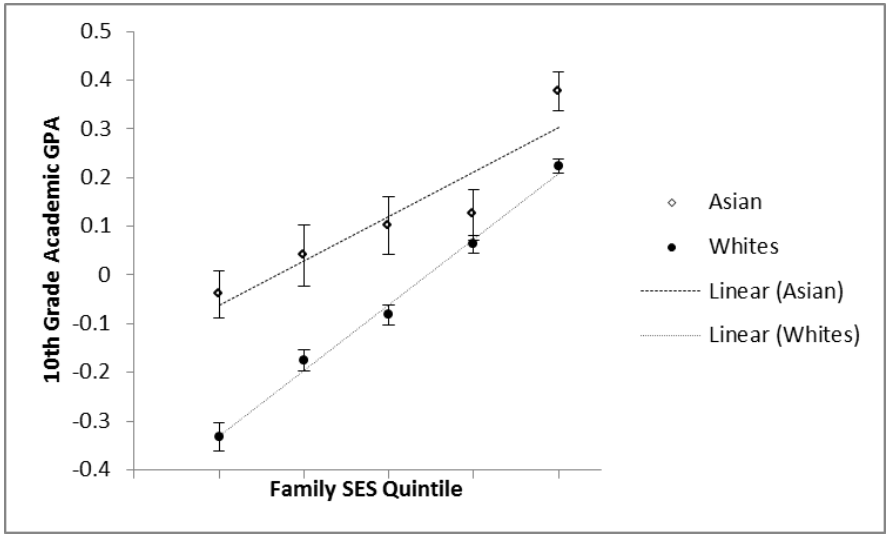
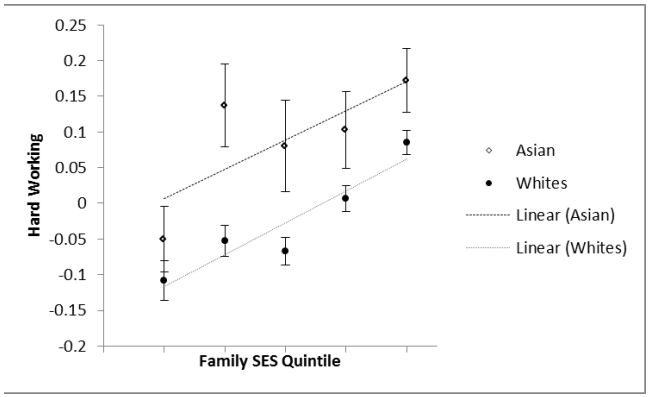


(3) 10th Grade Overall GPA

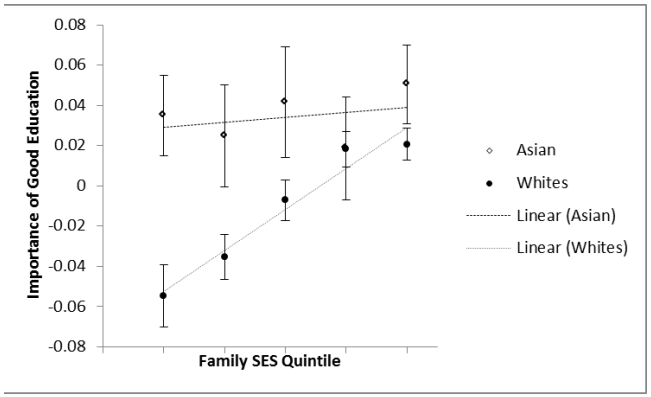


(4) 10th Grade Academic GPA

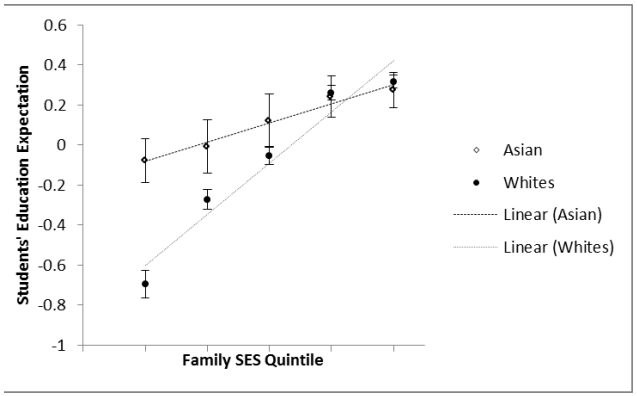
Figure 2. Achievement and Family SES: Asian Americans and Whites, ELS 2002 10th Grade (Adjustment has been made for School Effects)



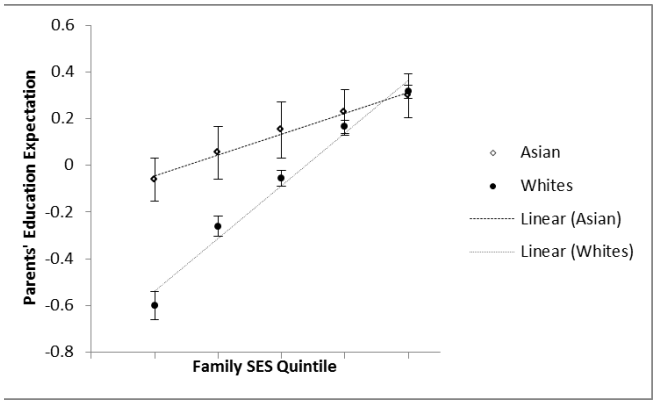
(1) Hard-Working



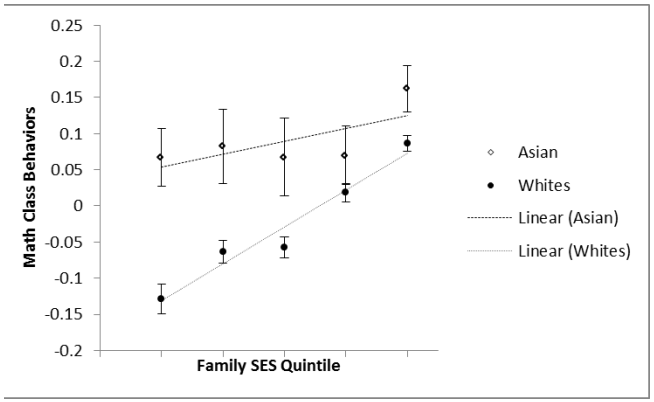
(2) Importance of Good Education



(3) Students' Education Expectation



(4) Parents' Education Expectation



(5) Math Class Behaviors

Figure 3. Difference in Social-Psychological Factors and Family SES: Asian Americans and Whites, ELS 2002 10th Grade (Adjustment has been made for School Effects)

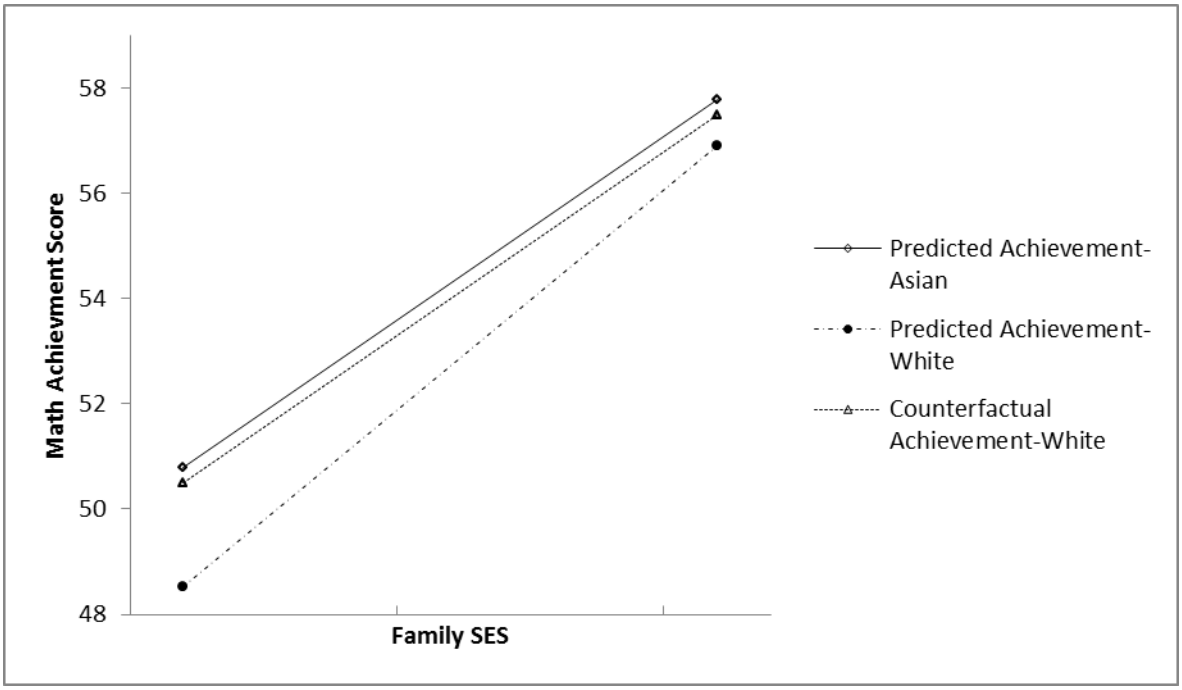


Figure 4. Counterfactual Analysis

Table 1. Descriptions of Variables

Demographic Controls	
SES	SES Index from ELS. It is constructed based on mother's and father's education, mother's and father's occupation, and family income
Immigrant Generation	First Generation is the baseline group
Intact Family	Whether children lives in a family with both mother and father. Non-intact family as the reference group (coded as 0).
Number of Siblings	Number of Siblings the 10th grader has.
Female	Female is coded as 1. Male is the reference group (coded as 0).
Held Back in School	Coded as 1 if the 10th grader had ever been held back for a grade
Behaviors and Attitudes	
Hard Working	Constructed from students' responses to two questions: (1) Work as hard as possible when studies; (2) Does best to learn what studies
Importance of Good Education	Student's rating on the importance of good education.
Students' Education Expectation	How far in school the 10th grader wants to go.
Parents' Education Expectation	How far in school parents want the 10th grader to go.
Math Class Behavior	Composite measurement based on students' behaviors in math class. Reported by math teacher.
Achievement	
Math Test	Mathematics standardized score, ranging from 10 to 90.
Reading Test	Reading standardized score, ranging from 10 to 90.
10^{th} Grade overall GPA	GPA for all 10th grade courses, ranging from 0 to 4.
10^{th} Grade Academic GPA	GPA for all academic 10th grade courses, ranging from 0 to 4.

Table 2. Descriptive Statistics on Parents and Students' Demographic and Socioeconomic Characteristics, Behaviors, Attitudes, and Achievement: Asian Americans and Whites from ELS 2002 10th Grade

	Whole Sample		Asian		White	
Variable	Mean	SD	Mean	SD	Mean	SD
Demographic Controls						
SES	0.19	0.71	0.00	0.87	0.25	0.68
Immigrant Generation						
Second Generation	0.09		0.46		0.03	
Third Generation	0.82		0.09		0.94	
Intact Family	0.67		0.70		0.67	0.47
Number of Siblings	1.79	1.52	1.96	1.78	1.77	1.47
Female	0.50		0.50		0.05	0.22
Held Back in School	0.09		0.07		0.50	0.50
Behaviors and Attitudes					0.09	0.29
Hard Working	2.76	0.78	2.90	0.76	2.74	0.78
Importance of Good Education	2.82	0.42	2.86	0.36	2.81	0.42
Students' Education Expectation	16.12	1.70	16.24	1.61	16.10	1.72
Parents' Education Expectation	16.20	1.45	16.51	1.41	16.15	1.45
Math Class Behavior	4.16	0.61	4.26	0.64	4.15	0.60
Achievement						
Math Test	53.57	9.31	54.01	10.62	53.50	9.08
Reading Test	53.10	9.55	50.54	10.06	53.51	9.40
10^{th} Grade overall GPA	2.88	0.79	2.97	0.82	2.87	0.79
10^{th} Grade Academic GPA	2.76	0.87	2.88	0.89	2.75	0.86
Sample Size	8978		1248		7730	

Note: (1) Missing values are excluded for calculation of means; (2) Based on unweighted data.

Table 3. Coefficients from School-Fixed Effects Regression of Achievement on Selected Variables: Asian Americans and Whites from ELS 2002 10th Grade

	1	2	3	4
	Math Test	Reading Test	10th Grade overall GPA	10th Grade Academic GPA
Asian	1.71 ***	-0.43	0.24 ***	0.28 ***
	(0.48)	(0.50)	(0.04)	(0.05)
SES	3.73 ***	3.70 ***	0.34 ***	0.38 ***
	(0.17)	(0.17)	(0.02)	(0.02)
Asian # SES	-0.95 ***	-0.38	-0.14 ***	-0.16 ***
	(0.34)	(0.35)	(0.03)	(0.03)
2nd Generation	0.50	1.62 ***	-0.04	-0.07
	(0.43)	(0.44)	(0.04)	(0.04)
3rd Generation	0.42	1.64 ***	-0.10 **	-0.12 **
	(0.47)	(0.48)	(0.04)	(0.05)
Intact Family	0.96 ***	1.02 ***	0.21 ***	0.21 ***
	(0.19)	(0.20)	(0.02)	(0.02)
Number of Siblings	-0.03	-0.09	-0.00	-0.00
	(0.06)	(0.06)	(0.01)	(0.01)
Female	-1.58 ***	1.09 ***	0.27 ***	0.34 ***
	(0.18)	(0.19)	(0.02)	(0.02)
Held Back in School	-6.17 ***	-4.99 ***	-0.41 ***	-0.44 ***
	(0.31)	(0.32)	(0.03)	(0.03)
Constant	53.06 ***	50.39 ***	2.64 ***	2.50 ***
	(0.50)	(0.52)	(0.05)	(0.05)
Observations	8,978	8,978	8,299	8,288
R-squared	0.13	0.12	0.17	0.17

Note: Standard errors in parentheses,*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table 4. Coefficients from School-Fixed Effects Regression of Behavioral and Attitudes Measurements on Selected Variables: Asian Americans and Whites from ELS 2002 10th Grade

	1	2	3	4	5
	Hard Working	Importance of Good Education	Students' Education Expectation	Parents' Education Expectation	Math Class Behavior
Asian	0.15***	0.05 **	0.32 ***	0.57 ***	0.19 ***
	(0.05)	(0.02)	(0.10)	(0.08)	(0.03)
SES	0.16***	0.05 ***	0.67 ***	0.61 ***	0.14 ***
	(0.02)	(0.01)	(0.03)	(0.03)	(0.01)
Asian # SES	-0.06*	-0.05 ***	-0.33 ***	-0.24 ***	-0.09 ***
	(0.03)	(0.02)	(0.07)	(0.06)	(0.02)
2nd Generation	-0.02	0.02	-0.07	0.02	-0.05
	(0.04)	(0.02)	(0.09)	(0.07)	(0.03)
3rd Generation	-0.13***	-0.04	-0.15	-0.06	-0.06 *
	(0.04)	(0.02)	(0.09)	(0.08)	(0.03)
Intact Family	0.10***	0.03 ***	0.15 ***	0.06 *	0.13 ***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Number of Siblings	0.00	0.00	-0.01	-0.01	-0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
Female	0.15***	0.12 ***	0.37 ***	0.10 ***	0.15 ***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Held Back in School	-0.17***	-0.03 *	-0.84 ***	-0.65 ***	-0.18 ***
	(0.03)	(0.02)	(0.06)	(0.05)	(0.02)
Constant	2.67***	2.74 ***	15.93 ***	16.12 ***	4.01 ***
	(0.05)	(0.03)	(0.10)	(0.08)	(0.04)
Observations	8,978	8,978	8,978	8,978	8,978
R-squared	0.04	0.03	0.10	0.10	0.07

Note: Standard errors in parentheses,*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table 5. School-Fixed Effects Regression of Math Achievement on Behavioral/Attitudes Measurements and Other Selected Variables: Asian Americans and Whites from ELS 2002 10th Grade

	1 Null	2 Hard Working	3 Importance of Good Education	4 Students' Education Aspiration	5 Parents' Education Aspiration	6 Math Class Behavior	7 Full
Asian	1.45**	1.26**	1.39**	1.17*	0.74	0.87~	0.30
	(0.47)	(0.47)	(0.47)	(0.46)	(0.46)	(0.46)	(0.45)
SES	3.53***	3.31***	3.45***	2.78***	2.74***	3.12***	2.16***
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
2nd Generation	0.38	0.41	0.35	0.51	0.39	0.59	0.65
	(0.43)	(0.43)	(0.43)	(0.42)	(0.42)	(0.42)	(0.40)
3rd Generation	0.32	0.51	0.39	0.54	0.44	0.55	0.77~
	(0.47)	(0.46)	(0.46)	(0.45)	(0.45)	(0.45)	(0.44)
Intact Family	0.98***	0.84***	0.92***	0.78***	0.89***	0.52**	0.41*
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.18)
Number of Siblings	-0.02	-0.03	-0.03	-0.02	-0.01	-0.02	-0.01
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Female	-1.59***	-1.81***	-1.80***	-2.05***	-1.73***	-2.11***	-2.40***
	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.17)
Held Back in School	-6.19***	-5.95***	-6.13***	-5.15***	-5.27***	-5.55***	-4.37***
	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)	(0.30)
Hard Working		1.45***					0.56***
		(0.11)					(0.12)
Importance of Good Education			1.76***				-0.43*
			(0.21)				(0.22)
Students Education Aspiration				1.24***			0.79***
				(0.05)			(0.06)
Parents Education Aspiration					1.40***		0.92***
					(0.06)		(0.07)
Math Class Behavior						3.45***	2.56***
						(0.15)	(0.15)
Constant	53.19***	49.31***	48.34***	33.45***	30.58***	39.33***	15.12***

	(0.50)	(0.58)	(0.77)	(0.98)	(1.15)	(0.77)	(1.31)
Observations	8,978	8,978	8,978	8,978	8,978	8,978	8,978
R-squared	0.13	0.15	0.14	0.19	0.18	0.19	0.24
p-value for Asian#SES	0.006	0.010	0.013	0.124	0.067	0.064	0.791

Note: Standard errors in parentheses,*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Appendix: Sensitivity Analysis Tables

Table A-2.1. Ethnicity, Family SES and Achievement (Hispanic and White)

	1 Math Test	2 Math Test	3 Reading Test	4 Reading Test	5 10th Grade overall GPA	6 10th Grade overall GPA	7 10th Grade Academic GPA	8 10th Grade Academic GPA
Hispanic	-3.25***	-3.25***	-2.66***	-2.67***	-0.18***	-0.18***	-0.19***	-0.19***
	(0.32)	(0.32)	(0.33)	(0.33)	(0.03)	(0.03)	(0.03)	(0.03)
SES	3.72***	3.83***	3.59***	3.71***	0.31***	0.33***	0.33***	0.36***
	(0.15)	(0.17)	(0.15)	(0.17)	(0.01)	(0.02)	(0.02)	(0.02)
Hispanic # SES		-0.49		-0.50		-0.13***		-0.14***
		(0.32)		(0.33)		(0.03)		(0.03)
2nd Generation	0.97*	1.01**	1.23**	1.27***	-0.04	-0.03	-0.07	-0.06
	(0.43)	(0.43)	(0.44)	(0.45)	(0.04)	(0.04)	(0.04)	(0.04)
3rd Generation	0.56	0.65	1.45***	1.54***	-0.12**	-0.1**	-0.16***	-0.13***
	(0.39)	(0.40)	(0.41)	(0.41)	(0.04)	(0.04)	(0.04)	(0.04)
Intact Family	0.98***	0.96***	0.94***	0.92***	0.21***	0.21***	0.21***	0.21***
	(0.18)	(0.18)	(0.19)	(0.19)	(0.02)	(0.02)	(0.02)	(0.02)
Number of Siblings	-0.01	-0.01	-0.1~	-0.1*	-0.01	-0.01	-0.00	-0.01
	(0.06)	(0.06)	(0.06)	(0.06)	(0.01)	(0.01)	(0.01)	(0.01)
sibling miss	-1.03**	-1.02***	-0.91*	-0.9**	-0.11**	-0.11***	-0.12**	-0.12***
	(0.38)	(0.38)	(0.40)	(0.40)	(0.04)	(0.04)	(0.04)	(0.04)
Female	-1.41***	-1.42***	1.21***	1.21***	0.28***	0.28***	0.35***	0.35***
	(0.17)	(0.17)	(0.18)	(0.18)	(0.02)	(0.02)	(0.02)	(0.02)
Held Back in School	-5.45***	-5.45***	-4.48***	-4.48***	-0.36***	-0.36***	-0.39***	-0.39***
	(0.27)	(0.27)	(0.28)	(0.28)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	52.44***	52.33***	50.36***	50.25***	2.66***	2.63***	2.52***	2.49***
	(0.43)	(0.44)	(0.45)	(0.46)	(0.04)	(0.04)	(0.04)	(0.05)
Observations	9,613	9,613	9,613	9,613	8,844	8,844	8,831	8,831
R-squared	0.16	0.16	0.13	0.13	0.16	0.16	0.16	0.16
Number of sid	731	731	731	731	708	708	707	707

Standard errors in parentheses

Table A-2.2. Ethnicity, Family SES and Achievement (Asian subgroups and White)

	1	2	3	4	5	6	7	8
	Math Test	Math Test	Reading Test	Reading Test	10th Grade overall GPA	10th Grade overall GPA	10th Grade Academic GPA	10th Grade Academic GPA
East Asian	2.36***	2.63***	0.32	0.40	0.17***	0.22***	0.20***	0.26***
	(0.48)	(0.50)	(0.49)	(0.51)	(0.04)	(0.05)	(0.05)	(0.05)
Other Asian	-1.41**	-1.23**	-2.04 ***	-1.99***	0.09*	0.11**	0.11*	0.13***
	(0.48)	(0.48)	(0.49)	(0.50)	(0.04)	(0.04)	(0.05)	(0.05)
SES	3.50***	3.72***	3.65 ***	3.71***	0.31***	0.34***	0.34***	0.38***
	(0.15)	(0.17)	(0.15)	(0.17)	(0.01)	(0.02)	(0.01)	(0.02)
East Asian # SES		-0.63		-0.19		-0.13***		-0.13***
		(0.45)		(0.46)		(0.04)		(0.05)
Other Asian # SES		-1.21***		-0.31		-0.14***		-0.17***
		(0.40)		(0.41)		(0.04)		(0.04)
2nd Generation	0.48	0.59	1.55 ***	1.58***	-0.04	-0.03	-0.07~	-0.05
	(0.41)	(0.41)	(0.42)	(0.43)	(0.04)	(0.04)	(0.04)	(0.04)
3rd Generation	-0.46	-0.37	0.98 *	1.00**	-0.15***	-0.14***	-0.18***	-0.16***
	(0.44)	(0.44)	(0.45)	(0.45)	(0.04)	(0.04)	(0.04)	(0.04)
Intact Family	0.98***	0.96***	0.98 ***	0.97***	0.21***	0.20***	0.21***	0.20***
	(0.19)	(0.19)	(0.20)	(0.20)	(0.02)	(0.02)	(0.02)	(0.02)
Number of siblings	-0.02	-0.03	-0.08	-0.08	-0.00	-0.00	-0.00	-0.00
	(0.06)	(0.06)	(0.06)	(0.06)	(0.01)	(0.01)	(0.01)	(0.01)
Female	-1.54***	-1.53***	1.09 ***	1.09***	0.27***	0.27***	0.34***	0.34***
	(0.18)	(0.18)	(0.18)	(0.18)	(0.02)	(0.02)	(0.02)	(0.02)
Held Back in School	-6.40***	-6.39***	-5.01 ***	-5.01***	-0.40***	-0.40***	-0.44***	-0.44***
	(0.31)	(0.31)	(0.32)	(0.32)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	53.90***	53.77***	51.02 ***	50.98***	2.70***	2.68***	2.56***	2.54***
	(0.47)	(0.47)	(0.49)	(0.49)	(0.04)	(0.04)	(0.05)	(0.05)
Observations	9,224	9,224	9,224	9,224	8,533	8,533	8,521	8,521
R-squared	0.14	0.14	0.12	0.12	0.16	0.16	0.17	0.17
Number of sid	720	720	720	720	699	699	698	698

Standard errors in parentheses*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A-3.1. Family SES, Behaviors and Attitudes (Hispanic-White)

	1 Hard Working	2 Importance of Good Education	3 Students' Education Expectation	4 Parents' Education Expectation	5 Math Class Behavior
Hispanic	0.09***	0.03*	-0.06	0.11 *	-0.10***
	(0.03)	(0.02)	(0.07)	(0.05)	(0.02)
SES	0.16***	0.05***	0.69***	0.63 ***	0.13***
	(0.02)	(0.01)	(0.03)	(0.03)	(0.01)
Hispanic # SES	-0.10***	-0.06***	-0.19***	-0.11 **	-0.05**
	(0.03)	(0.02)	(0.07)	(0.05)	(0.02)
2nd Generation	-0.04	-0.02	-0.02	0.14 *	-0.07**
	(0.04)	(0.02)	(0.09)	(0.07)	(0.03)
3rd Generation	-0.13***	-0.05**	-0.21**	-0.10	-0.09***
	(0.04)	(0.02)	(0.08)	(0.07)	(0.03)
Intact Family	0.08***	0.03***	0.14***	0.04	0.13***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Number of Siblings	0.00	-0.00	-0.02*	-0.01	-0.01
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
Female	0.19***	0.12***	0.42***	0.16 ***	0.15***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Held Back in School	-0.15***	-0.03**	-0.73***	-0.60 ***	-0.19***
	(0.03)	(0.01)	(0.06)	(0.05)	(0.02)
Constant	2.67***	2.77***	15.95***	16.13 ***	4.06***
	(0.04)	(0.02)	(0.09)	(0.07)	(0.03)
Observations	9,613	9,613	9,613	9,613	9,613
R-squared	0.04	0.03	0.10	0.09	0.07
Number of sid	731	731	731	731	731

Standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A-3.2. Family SES, Behaviors and Attitudes (Asian Subgroups-White)

	1 Hard Working	2 Importance of Good Education	3 Students' Education Expectation	4 Parents' Education Expectation	5 Math Class Behavior
East Asian	0.10**	-0.01	0.22**	0.36***	0.13***
	(0.05)	(0.03)	(0.10)	(0.09)	(0.04)
Other Asian	0.12**	0.04	0.09	0.39***	0.12***
	(0.05)	(0.02)	(0.10)	(0.08)	(0.03)
SES	0.15***	0.05***	0.69***	0.62***	0.14***
	(0.02)	(0.01)	(0.03)	(0.03)	(0.01)
East Asian # SES	-0.05	0.00	-0.24**	-0.19**	-0.09***
	(0.04)	(0.02)	(0.09)	(0.08)	(0.03)
Other Asian # SES	-0.04	-0.06***	-0.42***	-0.27***	-0.08***
	(0.04)	(0.02)	(0.08)	(0.07)	(0.03)
2nd Generation	-0.07*	0.01	-0.02	0.10	-0.07**
	(0.04)	(0.02)	(0.08)	(0.07)	(0.03)
3rd Generation	-0.15***	-0.05**	-0.22**	-0.10	-0.11***
	(0.04)	(0.02)	(0.09)	(0.07)	(0.03)
Intact Family	0.09***	0.03***	0.17***	0.05*	0.14***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Number of siblings	0.00	0.00	-0.01	-0.01	-0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
Female	0.16***	0.12***	0.38***	0.11***	0.15***
	(0.02)	(0.01)	(0.04)	(0.03)	(0.01)
Held Back in School	-0.19***	-0.04**	-0.86***	-0.67***	-0.20***
	(0.03)	(0.02)	(0.06)	(0.05)	(0.02)
Constant	2.71***	2.76***	15.98***	16.15***	4.05***
	(0.05)	(0.02)	(0.10)	(0.08)	(0.03)
Observations	9,173	9,223	9,147	9,154	9,188
R-squared	0.04	0.03	0.10	0.10	0.07
Number of sid	718	720	719	719	719

Standard errors in parentheses*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

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