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Academic Trajectories of Chinese, Korean, Filipino, Mexican, and Non-Hispanic White Immigrants During High School and the Impacts of Social Capital

A Dissertation submitted in partial satisfaction
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Akira Kanatsu

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Dissertation Committee:
Dr. Ruth K. Chao, Chairperson
Dr. Mary Gauvain
Dr. Chandra A. Reynolds

The Dissertation of Akira Kanatsu is approved:

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Committee Chairperson

University of California, Riverside

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All my love,

Akira Kanatsu, Ph.D.

ABSTRACT OF THE DISSERTATION

Academic Trajectories of Chinese, Korean, Filipino, Mexican, and Non-Hispanic White Immigrants During High School and the Impacts of Social Capital

by

Akira Kanatsu

Doctor of Philosophy, Graduate Program in Psychology
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Dr. Ruth K. Chao, Chairperson

This study investigated the trajectories of school GPA among immigrant youth during high school and the associations between these trajectories and financial, human, and social capital factors, after accounting for demographic differences. The sample consisted of 3,454 high school students (mean age = 14.51 year-old in the fall of 9th grade), who identified themselves as first- or second-generation Chinese, Korean, Filipino, Mexican, or White immigrants, as well as third-plus-generation White youth.

Ethnic-generational variations in the latent factors (i.e., initial level and growth) of academic trajectories were first assessed between the third-plus-generation White youth, the reference group, and the ten immigrant groups, using Latent Growth Modeling (LGM). Generational variations were then examined within ethnic/racial groups. Finally, variations in academic trajectories were explored within ethnic/ethnic-generational groups using Latent Class Growth Analysis (LCGA). Once multiple trajectory classes were identified, multinomial logistic regression was used to test the associations between

the trajectory classes and financial, human, and social capital factors, over and above demographic differences.

The results of LGM models indicated higher initial GPAs among both generations of Chinese, Korean, and Filipino youth, lower initial GPAs among both generations of Mexican youth, and similar initial GPAs among both generations of White immigrant youth, compared to their third-plus-generation White counterparts. For the growth of GPAs, Asian youth had more negative, Mexican youth had somewhat more positive, and White immigrant youth had similar growth, compared to the reference group, which had slightly negative change over time. The capital factors did not explain the ethnic-generational variations. Generational variations within ethnic groups were only found among Chinese, Koreans, and Filipinos. When such variations were found, first-generation youth had higher initial GPAs and more negative growth than their second-generation counterparts. Unlike the ethnic-generational variations, however, the generational variations in growth of GPAs were explained by the capital factors. The results of LCGA indicated 3 to 4 classes of academic trajectories in each ethnic/ethnic-generational group. They represented high, middle, and low achieving classes. Finally, the results of multinomial logistic regression indicated that some of the social capital factors were associated with the trajectory classes of Chinese and Korean youth.

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INTRODUCTION

The number of children growing up in immigrant households is projected to increase from one in five today, to one in three by 2040 (Hernández, Denton, & Macartney, 2007; Kao & Rutherford, 2007; Suarez-Orozco & Suarez-Orozco, 2001; U.S. Census Bureau, 2001; Zhou, 1997). This indicates greater and increasing impacts of their adaptation in our society. More specifically, our society will benefit if these children grow up to have greater career success and financial stability. Their failure to do so, on the other hand, can result in numerous problems for the future of our society and economy.

Educational achievement is one of the most significant predictors of successful lives in our society. Academic achievement during high school has important implications for adolescents' further access and advancement to higher education, which is more strongly associated with career success and financial stability than ever before. Thus, educational success in high school is especially relevant to immigrant and ethnic minority families as they often stress education as their sole opportunity for upward mobility in the United States (Caplan, Choy, & Whitmore, 1991; Gibson, 1991; Gibson & Bhachu, 1991; Suarez-Orozco, 1989). In fact, many recent immigrants have indicated stronger educational aspirations than their non-Hispanic White (White) counterparts, once socio-economic status was controlled (Fan, 2001; Fuligni, 1997; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008).

The importance of education among immigrant students, however, does not always lead to achievement in school. Research has shown that the academic

achievement of immigrant students, often compared to their native-born White counterparts, varied tremendously (e.g., Blair & Qian, 1998; Fan, 2001; Fuligni, 1997; Kao, 1995). Therefore, as the number of children growing up in immigrant households is projected to increase, understanding the academic achievement of immigrant students during high school becomes increasingly important. Furthermore, because Asian and Hispanic immigrants represent majority of current migrants to the United States (Suárez-Orozco & Suárez-Orozco, 2001; U.S. Census Bureau, 2001), understanding their school performance, as well as understanding factors associated with their achievement levels, will have implications for future educational policies and interventions.

As an ethnic minority group, Asian American students have been academically quite successful. A large number of studies have reported that Asian American students in high school outperformed not only other minority groups, but also their White counterparts (e.g., Barringer, Takeuchi, & Xenos, 1990; Broh, 2002; Chao, 2001a; Fan, 2001; Fuligni, 1997; Kao, 1995; Kao & Rutherford, 2007; Kao, Tienda, & Schneider, 1996; Kao & Thompson, 2003; Mau, 1997; Peng & Wright, 1994; Sue & Okazaki, 1990; Yan & Lin, 2005). In addition, research has shown that Asian American students have the lowest dropout rates in high school (Kao & Thompson, 2003; The National Center for Education Statistics, 1998) as well as the highest proportions of students in college preparatory courses (Fuligni, 1997; Kao & Thompson, 2003) than all other ethnic groups. These findings have created the stereotype of Asian American students in general as "academic superstars" and "model minorities" (Kitano & Sue, 1973; Lee, 1996; Leong,

Chao, & Hardin, 2000), which has increased researchers' interests in identifying the secret behind the success of these students.

Other research, however, has recognized the considerable variation among Asian American students in their school performance (Blair & Qian, 1998; Fuligni, 1997; Fuligni & Witknow, 2004; Lee, 1996; Mouw & Xie, 1999; Portes & Rumbaut, 2001). That is, although Asian American students, as a pan-ethnic group, often exceeded other ethnic groups in their academic performance, some Asian American sub-ethnic groups (e.g., Filipinos and South Asians) were not succeeding in school at the levels of other sub-ethnic groups (e.g., Chinese or Koreans). In addition to the differences across sub-ethnic groups, research has also indicated within ethnic group variations (Lee, 1996). That is, even within each sub-ethnic group, there is a possible variation in achievement levels across individuals that need to be further examined.

In contrast to Asian American students, Hispanic students, especially those from Mexico, who make up the majority of the Hispanic population, have lower academic performance levels in high school than their Asian and White counterparts (e.g., Fuligni, 1997; Glick & White, 2003; Kao & Tienda, 1995; Kao & Thompson, 2003; Padilla & Gonzalez, 2001). Studies have attempted to explain the underachievement of Hispanic students through their disadvantaged socio-economic status (SES) (Padilla & Gonzalez, 2001; Schmidley, 2001). Although accounting for SES diminished a substantial proportion of academic performance differences between Hispanics and Whites, the academic performance of Hispanic students was still lower than that of White students. In other words, lower academic performance of Hispanic students was partially due to their

disadvantage in SES and yet, the differences in academic performance still remained unaccounted for.

Furthermore, there are somewhat inconsistent findings when first- and second-generation immigrants were compared within pan-ethnic groups. For example, some studies have found similar overall GPAs and test scores between first- and second-generation Asian immigrant students (Kao & Rutherford, 2007), whereas other studies have found higher achievement levels among first-generation Asian students compared to second- and later generations of Asian students (Alva, 1993; Chao, 2001; Fuligni, 1997; Kao & Tienda, 1995; Mau, 1997). Similarly, some studies have found similar overall GPAs and test scores between first- and second-generation Hispanic students (Kao & Tienda, 1995), whereas other studies have found higher achievement levels for first-generation Hispanic students than their second-generation counterparts (Padilla & Gonzalez, 2001; Rumbaut, 1995). However, White students had similar levels of academic performance across generational status, including third generation and beyond (Kao & Rutherford, 2007). That is, first- and second-generation White students had comparable GPAs and test scores as their third- or later generation counterparts.

In summary, despite the large number of studies, the variations in academic performance among immigrant students are not fully understood due to the lack of sub-ethnic or generational group comparisons and inconsistent findings. Moreover, the understanding of academic performance during high school is also limited because most studies have relied upon cross-sectional data and rarely examined longitudinal data (Portes & Rumbaut, 2001).

Use of cross-sectional data causes two major limitations compared to examinations of longitudinal data: 1) inability to examine directions of effects between academic performance and predicting factors and 2) inability to examine how academic performance changes over time. First, cross-sectional data can only allow examinations of concurrent associations between academic performance and predicting factors. Therefore, the direction of effects, whether predictors are causing changes in academic performance or vice versa, cannot be determined. Using a longitudinal data, however, researchers can control previous levels of academic performance and test the effects of predictors on later achievement levels. Second, cross-sectional data cannot provide information regarding changes because school outcomes are only available at one time point. Longitudinal analyses, on the other hand, include school outcomes from multiple time points and allow identifying the patterns of academic trajectories, through latent growth curve analyses, and whether these patterns differ across ethnic-generational groups. These longitudinal analyses, for example, can distinguish students whose academic performance is initially low but increases over time, from students whose initial performance is low and remains low.

Understanding the academic trajectories of immigrant students is especially important because some of the differences from their U.S.-born counterparts may be due to the migration process. For example, as previously stated, many people who migrate hold strong aspirations for success and consider education as a pathway to achieve such upward mobility in the host country (Fan, 2001; Fuligni, 1997; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). In addition, immigrant students are also likely to report

stronger obligations to succeed because their parents have made immense sacrifices in order to provide them with the educational opportunities of the United States (Fuligni, Tseng, & Lam, 1999; Gibson & Bhachu, 1991; Kao, 1995; Leong, Chao, & Hardin, 2000; Suárez-Orozco & Suárez-Orozco, 1995; Zhou & Bankston, 1998). Immigrant students, therefore, tend to have stronger motivation and persistence to succeed (Kao, 1995; Padilla & Gonzalez, 2001). Furthermore, Asian immigrant students are especially likely to put their efforts into education because of the high values Asian families place on education. The model minority image and their experiences and perceptions of limited mobility in non-academic areas are also likely to further direct Asian students' attention toward education (Lee, 1996; Leong, Chao, & Hardin, 2000; Sue & Okazaki, 1990). The model minority image, for example, sets up extremely high expectations and standards for their academic achievement from which they feel great pressure. Such pressure may explain the extreme amounts of effort Asian students put into their school work and especially into getting good grades. Finally, most first-generation immigrants learn English after they migrate to the United States. Although these students vary in their initial fluency in English and in how quickly and adeptly they learn the language, general increases in achievement levels are expected for most immigrant students as their English language skills improve. This expectation is partially supported by the finding that first-generation immigrant students, especially those who migrated at older age (i.e., after fourth grade), indicated lower achievement levels on their reading test scores than those who migrated at younger age (i.e., before fourth grade) or native-born students (Glick & White, 2003). Thus, these factors associated with the migration process suggest that the

academic performance of immigrant students, especially those from Asian countries, will likely increase at a greater rate over time than their U.S.-born counterparts.

The migration process, however, may also cause variability on academic achievement among immigrant students. That is, how immigrants adapt to their new lives can influence their academic performance at the initial level and the growth over time. For example, some immigrant students may experience greater hardships than others, including separation from relatives and even parents who remain in their countries of origin (Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). In addition, immigrant students often face increased responsibility in their family in the settlement process such as taking care of siblings and translating for their parents (Chao, 2006; Chen, Bond, & Tang, 2007; Valenzuela, 1999). These issues not only take up their time to study, but can cause stress among immigrant students, which in turn can negatively influence their school performance over time (Telzer & Fuligni, 2009). In addition, Lee (1996) found that the ways Asian students identified themselves with the model minority stereotype also influenced their academic achievement in the long run. That is, when Asian students live up to the model minority image by putting their efforts into studying, these students are likely to identify themselves with the image and keep high achievement levels over time. Some Asian American students, however, fear that they do not live up to their model minority image and are afraid to seek help when they have difficulties in class. Because these students do not seek the necessary academic attention, their achievement levels eventually decline. Examining the variations and patterns of academic achievement

over time, therefore, is important in understanding school performance of immigrant students from various ethnic backgrounds.

In relation to the variations in academic achievement levels, research has examined numerous factors that might explain why some students do better in school than others. In an attempt to determine the factors associated with ethnic-generational variations, studies have recognized the importance of controlling for socio-economic factors such as family income, parental education, and family structure because they have a profound influence on academic performance (e.g., Fuligni, 1997; Glick & White, 2003; Gregory & Weinstein, 2004; Kao & Thompson, 2003; Kao & Tienda, 1995; Mau, 1997). Researchers have conceptualized socio-economic factors as financial and human capital. Financial capital, for example, refers to the money and commodity resources families possess. Financial capital such as family income, therefore, can benefit students by providing school materials, stability in their living arrangements, and access to high quality schools. Human capital, on the other hand, refers to the stock of skills and knowledge individuals possess. Similar to financial capital, human capital such as parental education can also benefit students because their parents' knowledge about school materials and systems can be used to prepare them for school. Because SES levels vary across ethnic-generational groups (Blair & Qian, 1998; Fuligni, 1997; Grodsky, Warren, & Kalogrides, 2009; Kao et al., 1996; Kao & Thompson, 2003; Pong, Hao, & Gardner, 2005; Warren, 1996), research has examined whether observed differences between ethnic-generational groups were due to their socio-economic status. Although research has found that these types of capital predicted adolescents' achievement levels,

variations between ethnic-generational groups often remained unexplained net of the capital (Blair & Qian, 1998; Broh, 2002; Caplan, 1991; Fuligni, 1997; Fuligni & Witkow, 2004; Kao & Tienda, 1995; Mouw & Xie, 1999; Zhang, 2003). Thus, ethnic-generational differences in academic achievement require further investigations of predicting factors over and above financial and human capital.

Other research has investigated parent-child interactions to explain differential academic achievement levels among ethnic-generational groups. These interactions are sometimes conceptualized as a part of social capital. Social capital in general is similar to financial and human capital in its ability to benefit youth's academic performance. Social capital, however, is unique from the other two types of capital in two ways. First, it is embedded in social relations and thus, unlike financial and human capital, social capital exists only as a result of interactions with others (Coleman, 1988, 1990). For example, parents' knowledge about the educational system is only considered a feature of social capital when parents communicate this knowledge to their adolescents through discussion or involvement in school related activities. Second, the effectiveness of social capital on academic achievement depends on contextual or situational needs of the students that may vary by their cultural backgrounds (Coleman, 1988). Social capital that is valuable to some ethnic-generational groups may be less beneficial or even harmful to others. Ultimately, social capital can benefit school achievement by providing a source of culturally relevant support and dissemination of information and resources (Bourdieu 1985; Coleman 1988; Portes 1998). Because social capital is more alterable than financial and human capital, understanding such culturally relevant resources for ethnic-

generational groups, therefore, will have great implications for future educational policies and interventions that are more appropriate for various immigrant groups.

According to Coleman (1988), there are two general types of social capital: social capital within the family and social capital outside the family. Social capital within the family involves interactions between parents and children. It is the primary means through which parents transmit their human capital, or skills and productivity, to their children (Kao & Rutherford, 2007). With regard to children's academic achievement, research has examined parents' involvement in school related activities as the primary component of social capital within family. Such research has found that students whose parents are well educated (human capital) and actively involved in their school related activities (social capital) have greater success in school (Coleman, 1988; Downey, 1995; Hagan, MacMillan, & Wheaton, 1996; Teachman, Paasch, & Carver, 1996). Social capital outside the family, on the other hand, includes both the cultural norms and value system of the community as well as the networks of friends and acquaintances (Kao & Rutherford, 2007). Coleman (1988) proposes "intergenerational closure" as a key component of social capital outside the family. This refers to the networks in which parents interact with parents of their children's friends, thus increasing surveillance and knowledge of all children's activities in and out of school. Through such networks, parents transmit and reinforce common norms and values associated with academic success, in addition to monitoring their children's activities. Finally, although it is not originally included as a component of social capital, parental sacrifice may be especially important for understanding immigrant students' academic achievement. Researchers

have argued that many immigrant students feel obligated to succeed in school because their parents have made immense sacrifices to provide better educational, career, and financial opportunities (Kao, 1995; Leong, Chao, & Hardin, 2000; Zhou & Bankston, 1998). If this is true, parental sacrifice should, at least partially, explain some of the variations in academic achievement among immigrant students.

Although these social capital factors are critical for students' academic achievement, findings across various studies have been inconsistent regarding the specific effects of these factors (Fan, 2001). Possible reasons for the inconsistency include the 1) multidimensional nature of the parental involvement, 2) age of the children, and 3) differential impact of parenting behaviors across ethnic groups (Fan, 2001). First, researchers believe that one of the reasons for the inconsistent effects of social capital is because they did not capture the multidimensional aspects of parental involvement (Bankston & Zhou, 2002; Chao, 2000; Ho & Willms, 1996; Kao & Rutherford, 2007; Zhou, 1997). Studies have operationally defined parental involvement as parents' communication with their children about education and school matters (e.g., Christenson, Rounds, & Gorney, 1992; Walberg, 1986), parent participation in school related activities (e.g., Stevenson & Baker, 1987), parents' communication with teachers about their children (e.g., Epstein, 1992), parental supervision at home (e.g., Keith et al., 1986, 1993; Marjoribanks, 1983), and parental aspirations for their children's academic achievement (e.g., Bloom, 1980). Depending on the dimensions of parental involvement, each may have a different impact on academic achievement. In fact, studies that adopted the multidimensional approach in understanding the effects of parental involvement have

reported greater effects for some dimensions than others (Singh et al., 1995, Fan & Chen, 2001).

Furthermore, Fan (2001) argued that students' age might also contribute to the inconsistent findings. Research has found that the effects of parental involvement tend to be stronger and more consistent for younger children (e.g., Keith et al., 1986; Stevenson & Baker, 1987). During middle and high school periods, some studies have reported positive effects of parental involvement on academic performance (Keith et al., 1993; Singh et al., 1995), whereas others have found no effects (Bobbett, French, Achilles, & Bobbett, 1995; Keith, 1991; Keith et al., 1986). Because adolescence is an important transitional period for the development of autonomy and independence, changes in parent-child relationships may influence the types of involvement that are more relevant to academic achievement (Fan, 2001). In addition, parental monitoring may have stronger consequences during this time period because adolescents require supervision from their parents.

Finally, parents in different ethnic or cultural groups may have different ways and degrees of involvement to their children's education (Fan, 2001; Hannum & Fuller, 2002; Zhou, 1997; Zhou & Bankston, 1994, 1998). In other words, parents may use behaviors that are more salient to their culture. For example, Chao (2000) discussed that Asian immigrant parents are more likely to use *structural* types of parental involvement in school related activities than *managerial* types. Structural involvement involves providing materials and an environment for studying, whereas managerial involvement refers to parents' actual involvement *at* the school as well as helping with homework. In

fact, research has indicated that the amount of social capital available to different ethnic and immigrant groups varied by type of social capital (Ho & Willms, 1996; Kao & Rutherford, 2007). First, Asian American parents were less likely to communicate with students' teachers (National Center for Educational Statistics, 1994), but were more likely to provide academic environment at home (e.g., Huang, Waxman, & Houston, 1993) than their non-Hispanic White counterparts. Second, Asian Americans and Hispanics also reported lower levels of parent participation at the school, but higher levels of home supervision, than non-Hispanic Whites did (Ho & Willms, 1996). Third, Whites and Hispanics reported similar levels for parent-adolescent discussion about school and communication with school personnel, which were higher than Asian Americans. Finally, several researchers have reported higher, more pronounced perceptions of parental sacrifice among immigrants than their native-born White counterparts (Kao, 1995; Zhou & Bankston, 1998). This result suggests that immigrant adolescents are, in fact, more likely to feel an obligation to do well in school because they feel that their parents have sacrificed their lives for them to have better educational opportunities.

Moreover, research lacks examinations of the differential effects of social capital factors on the initial levels, and changes over time in school performance, including types of growth, across and within ethnically diverse immigrant groups. Based on the data from the National Educational Longitudinal Study (NELS:88), Hong and Ho (2005) and Fan (2001) conducted the only studies that tested the differential effects of multiple parental involvement dimensions on academic trajectories across pan-ethnic groups. Their study

found that parent-adolescent discussion about school had significant associations with both initial achievement levels and changes over time for White students, but only with initial achievement levels for Hispanics, and only with changes over time for Asian Americans students. They also found that parents' participation in school events was associated with both initial levels of, and changes over time in, the academic performance of Asian Americans, but not of other ethnic groups. Although these findings suggest possible ethnic group differences on the effects of parental involvement dimensions, no research has examined whether these patterns differ across ethnic-generational status. In addition, other parental involvement dimensions, such as providing academic environment/materials, need to be examined in order to understand the ethnic-generational variations. Research, therefore, is warranted to provide further understanding of the socio-cultural factors contributing to how the school performance of immigrant students changes throughout high school.

Therefore, this proposed study aims to increase the following understandings by examining first- and second-generations of immigrant high school students from China, Korea, the Philippines, and Mexico as well as both generations of White immigrants from Europe and Russia, compared to third-plus generation European Americans. First, it aims to achieve a better understanding of immigrant students' academic achievement trajectories during high school by examining between and within ethnic-generational variations. Second, it also tests the effects of social capital factors on academic achievement over and above financial and human capital to examine if 1) these factors can explain ethnic-generational variations in academic trajectories, and 2) certain social

capital factors are more salient in explaining different trajectory patterns within ethnic-generational groups.

Academic Achievement

Research has typically examined high school academic achievement using school grades and test scores. Although both outcomes are considered to reflect students' achievement levels and are positively correlated to each other (Kao & Thompson, 2003), findings suggest qualitative differences between them. For example, studies have consistently found lower scores on standardized tests of reading, but similar or higher grades in both English and math courses for immigrant students compared to their native-born counterparts (Kao & Tienda, 1995; Rosenthal & Feldman, 1991; Rumbaut, 1995).

These differences may be due to the fact that school grades are determined not only by academic performance, but also by a wider variety of students' qualities such as their attitudes in classrooms. More specifically, teachers often determine students' grades by taking into account their attitude, motivation, and effort in and out of the classroom, as well as their previous achievement. In fact, researchers have argued that immigrant students, especially those who have more recently migrated, performed better in school because they had more respect for authorities and were better-behaved in class (Suárez-Orozco & Suárez-Orozco, 1995). In addition, teachers of immigrant students may also consider the difficulties these students face due to migration, such as limited English fluency, when assigning grades. Standardized tests, on the other hand, are supposed to only measure students' knowledge of school materials and thus do not reflect other qualities of the students. School grades, therefore, may provide a more holistic

understanding of how immigrant students are doing in class. Furthermore, grades are also important because students and parents regularly monitor student performance via grades, and they impact students' perceived odds of success in school, which may further affect their aspirations for educational attainment (Kao & Thompson, 2003).

Studies examining across ethnic group differences have typically relied on nationally representative data sets collected primarily through the U.S. Department of Education's National Center for Educational Statistics (NCES), which includes the National Educational Longitudinal Study of 1988 (NELS:88), the High School and Beyond Study (HS&B), and the National Assessment of Educational Progress (NAEP).

The NELS:88 data has been popular among researchers because of the over representations of Asian and Hispanic adolescents, which allowed for not only across ethnic group comparisons, but also within group analyses examining across generational differences within these groups. The NELS:88 first collected information from students in the eighth grade in 1988. The original sample consisted of 24,599 students that were White, Hispanic, African Americans, American Indian, or Asian from 1,035 public and private schools. All students participated in standardized tests in math, science, reading, and social studies, and reported on their grades in four subject areas, English, math, science, and social studies. These students were then followed up in spring 1990, when most of the cohort was in the tenth grade, and in spring of 1992, when most had completed their senior year of high school. The NELS:88 data, thus, allows researchers to examine both concurrent and longitudinal variations in academic achievement levels across ethnic-generational groups.

The High School and Beyond data provides base-year information on approximately 28,000 students who were high school seniors in 1980. Approximately 12,000 students were followed up in 1982, 1984, and 1986. The base-year information includes demographic and other background information, college experiences, work history, and high school grades and ability tests prepared for this data collection.

Finally, NAEP has tested twelfth graders' academic achievement in reading, writing, math, and science. Although these tests are not conducted annually, the reports made available by NCES after each assessment test since 1971 have provided the average scores by racial/ethnic groups (i.e., White, African Americans, Asian/Pacific Islander, Hispanic, and American Indian/Alaska Native), thus allowing pan-ethnic comparisons on these test scores.

Concurrent Comparisons

GPA. Studies that examined tenth grade GPA (based on self-reported grades in four subject areas) using the second follow-up data of the NELS:88 in 1990 found the highest overall grades for Asian Americans compared to Whites, African Americans, and Hispanics (Kao, 1995; Kao & Rutherford, 2007; Kao, Tienda, and Schneider, 1996; Kao & Thompson, 2003). Hispanics, on the other hand, had significantly lower grades than Asian Americans and Whites. When factors such as socio-economic status and immigrant status were controlled, however, Hispanics no longer had lower grades than Whites, whereas Asian Americans still had moderately higher grades than Whites (Kao et al., 1996). Other studies with smaller-scale local data also found higher grades among Asian American youth and lower grades among Hispanic youth compared to their White

counterparts (Chao, 2001; Fuligni, 1997; Fuligni & Witknow, 2004; Kanatsu & Chao, 2005; Yan & Lin, 2005). Broh (2002), however, examining the third follow up of the NELS:88 data, found that by the *twelfth* grade, Asian American students had higher English and math grades than African Americans, Hispanic, and American Indian students, but similar math grades as Whites, after controlling for school performance in the tenth grade, socio-economic factors of family income, parental education, and family structure, and also participation in interscholastic sports, student's gender, and school characteristics. Thus, research has found that Asian Americans, as a pan-ethnic group, received similar if not higher grades than Whites, whereas Hispanics received lower grades than both Asians and Whites.

Kao (1995) further examined differences in school performance in *tenth* grade between Whites and a number of Asian subgroups (i.e., Chinese, Filipino, Japanese, Korean, Southeast Asian, Pacific Islander, South Asian, and West Asian (e.g., Iranian, Afghan, and Turkish)). Relative to Whites, Chinese, Koreans, Southeast Asians, and South Asians earned higher grades, whereas Filipinos, Japanese, Pacific Islanders, and West Asians earned similar grades, even after controlling for background characteristics, socio-economic status, educational resources, and immigrant status. Within the Asian subgroups, Chinese, Koreans, Southeast Asians, and South Asians earned significantly higher grades than the comparison group of West Asians, whereas Filipinos, Japanese, and Pacific Islanders earned similar grades. However, these differences among Asian ethnic groups were no longer significant after controlling for the above covariates. Using the *eighth* grade data of the NELS:88 in 1988, Mouw and Xie (1999) found that Chinese

youth had significantly higher overall grades than other Asian subgroups such as Filipinos, Southeast Asians, and "Other" Asians even after accounting for socio-economic and immigrant status, and language fluency. Based on the *twelfth* grade data of the NELS:88 in 1992, Blair and Qian (1998) also compared the GPAs of different sub-ethnic groups of Asian Americans. They found that Chinese students had the highest GPAs, followed closely by Koreans and South Asians. Japanese and Filipino students had the lowest GPAs.

In addition, based on course grades in math and English for middle and high school students in a smaller-scale study, Fuligni (1997), and Fuligni and Witkow (2004) reported higher grades for East Asians (Chinese, Japanese, and Koreans) in both subjects than Filipinos. When compared to White students, Chinese and Korean immigrant students had higher overall GPAs, whereas Filipino students received comparable GPAs (Kanatsu & Chao, 2005: Paper Presentation at 2005 SRCD).

In a study that compared two generations of Chinese immigrants to their third-plus-generation White counterparts, Chao (2001) reported that both generations of Chinese students received significantly higher grades than White students. In addition, first-generation Chinese students received significantly higher grades than second-generation Chinese students.

Chao, Kanatsu, Stanoff, Padmawidjaja, and Aque (2009) further examined Asian ethnic-generational groups separately in a study of over two thousands students, in which school grades in ninth, tenth, and eleventh grades of first- and second-generation Chinese, Korean, and Filipino American youth were compared to those of their third-

plus-generation White counterparts. The findings indicated that compared to Whites, both generations of Chinese and Koreans had higher GPAs, whereas both generations of Filipinos had comparable GPAs, at all three time points.

Furthermore, Kanatsu and Chao (2005) compared school grades at ninth grade across first- and second-generation Chinese, Koreans, Filipino, and Mexican Americans, as well as third-plus-generation Whites. Their results indicated that both generations of Chinese received higher overall GPAs than any other groups. Koreans, Filipinos, and Whites had similar overall GPAs, which were higher than both generations of Mexicans. When English/History and Math/Science grades were examined separately, the same pattern remained except that first-generation Koreans received comparable grades in math/Science to both generations of Chinese.

Thus, taken together, it appears that Chinese in particular have the highest, and Filipinos perhaps the lowest, grades than other Asian ethnic groups. Koreans seem to fall between Chinese and Filipinos, and are either comparable or higher than White youth. Generational differences, on the other hand, are less notable than ethnic group differences. Some generational differences in school grades were found among Chinese, Koreans, and Mexicans, but no such differences were found between first- and second-generations of Filipinos and Whites. The results suggest that when generational differences are found, first-generation immigrant students are likely to have higher school grades than their second generation counterparts.

Test scores. The results of test scores indicated more mixed findings across ethnic-generational groups. For example, the most recent results reported by NAEP

(NCES, 2005, 2007) have indicated that the average reading score (287) for Asian/Pacific Islanders in 2005 was lower than that of Whites (293), whereas Hispanics (272) scored lower than both groups. Although Asian/Pacific Islanders have scored somewhat lower than Whites (i.e., 151 versus 154 in 2002, respectively) in writing scores in the past, they scored slightly higher (160) than Whites (159) in the most recent test in 2007. Hispanics had the lowest average (139) writing score among these groups. With the average math scores, Asian/Pacific Islanders (163) scored the highest, followed by Whites (157) and Hispanics (133). In addition, in terms of the percentage of students who were considered as "above proficient" in math, Asians were the highest with 36%, whereas 29% of Whites and Only 8% of Hispanics fell in this category. Finally with science tests in 2005, the average score for Asian/Pacific Islanders (153) was slightly lower than Whites (156), but higher than Hispanics (128). The gap between Asian/Pacific Islanders and Whites in science, however, has reduced over the years as Asian/Pacific Islanders increased their average scores from 147 in 1996 to 153 in 2005, whereas Whites decreased their average scores from 159 to 156 during the same time period.

Studies that examined NELS:88 data found that, in *eighth grade*, Asians had similar combined reading and math test scores as Whites (Peng & Wright, 1994). By the *tenth grade*, they were higher than whites in their combined reading and math scores (Mau, 1997). Finally, by the *twelfth grade*, after controlling for test scores in the tenth grade and socio-economic factors, Asians were higher on both math and reading scores than Whites, African Americans, Hispanics, and American Indians (Broh, 2002). Although these studies focused on levels of academic performance at one time point,

together they reflect the possibility that the performance of Asian Americans students may gets higher toward the end of high school when academic outcomes matters the most for entrance to college.

Kao (1995) also examined differences in test scores between Whites and a number of Asian ethnic subgroups (i.e., Chinese, Filipino, Japanese, Korean, Southeast Asian, Pacific Islander, South Asian, and West Asian). Relative to Whites, Chinese, Koreans, and Southeast Asians had higher math scores but similar reading scores, whereas Filipinos, Japanese, South Asians, and West Asians had comparable math and reading scores. Pacific Islanders had lower math and reading scores than Whites. Within Asian ethnic groups, all Asian subgroups were comparable to each other with the exception that Pacific Islanders were lower on both scores. The above differences remained significant even after controlling for background characteristics, socio-economic status, educational resources, and immigrant status. Similarly, using the *eighth* grade data of the NELS:88 in 1988, Mouw and Xie (1999) found that Chinese youth had significantly higher math scores than Pacific Islanders, South Asians, Filipinos, Southeast Asians, and "Other" Asians even after accounting for socio-economic and immigrant status, and language fluency.

Studies relying on the NELS:88 data have also examined generational differences among Asian Americans in tests of math, reading, science, and social studies, and found that second generation youth outperformed their first- and third-generation counterparts (Kao & Rutherford, 2007; Zhang, 2003). These studies found that at each grade level, second generation youth had higher scores in math, reading, science, and social studies

than first- and third-generation youth, and that first-generation youth had higher science scores (in grades 10 and 12 only), and math and social studies scores than third-generation. However, differences between first- and second-generation students on all tests except reading were no longer significant after accounting for socio-economic factors, ethnic origin, and language fluency. First-generation students outperformed third-generation in math and science, even after controlling for the above factors.

In addition to GPA, Kanatsu and Chao (2005) also examined reading, language, and math test scores across first- and second-generation Chinese, Korean, Filipino, and Mexican Americans, and third-plus-generation of European American youth. The results indicated that reading and language scores were higher among Whites, both generations of Chinese, and second-generation Koreans than first-generation Koreans and both generations of Filipinos. Although both generations of Mexicans scored lower on reading and language tests than other ethnic groups, second-generation Mexicans had higher reading scores than their first-generation counterparts. For math scores, both generations of Chinese and Korean Americans scored higher than Whites and both generations of Filipinos. Again, both generations of Mexicans scored the lowest, though second-generation Mexicans had higher math scores than their first-generation counterparts. These results suggest that ethnic variation in test scores may depend on the subjects, such that Chinese and Korean Americans often had the highest test scores in math, but similar or somewhat lower scores in reading than their White counterparts. Mexican Americans had lower test scores in all subject areas than Asian and White youth. When ethnic-generational groups were examined, only second-generation Korean (reading and

language) and Mexican Americans (reading and math) showed advantages over their first-generation counterparts. This pattern is opposite from that found for school grades, where first-generation outperformed their second-generation counterparts.

Dropouts. Based on the NELS:88 data, Kao and Thompson (2003) reported that Asian Americans had the lowest percentage of drop outs (14%) than other groups (17% of whites, 29% of Native Americans, 28% of Mexican Americans, and 26% of Puerto Ricans). Additional studies, not based on the nationally representative data, also find that dropouts were less likely to be Asian than Hispanic, African Americans, or White (Rumberger, Ghatak, Poulos, Ritter, & Dornbusch, 1990).

Types of courses. Kao and Thompson (2003) also reported that a greater proportion of Asian American high school seniors (51%) were in college preparatory courses than other ethnic groups (46% of Whites, 36% of African Americans, 31% of Hispanics, and 23% of Native Americans). Similarly, Fuligni (1997) reported that a greater proportion of East Asians (40%) took advanced math classes (e.g. Algebra 2) in the tenth grade than Filipinos (20%), Whites (20%), and Hispanics (7%), and that a vast majority of East Asians (over 80%) were also in college placement English compared to 58%, 48%, and 24% of Filipinos, Whites, and Hispanics, respectively.

Longitudinal Comparisons

Only a few studies have examined ethnic variations in academic achievement trajectories during high school. Fan (2001) and Hong and Ho (2005), both using the test scores in the NELS:88 data, examined the intercepts and slopes of reading, math, science, and social studies scores between 8th and 12th grades across pan-ethnic groups

(i.e., Asian, Hispanic, White, and African Americans). The results indicated that Asian students had slightly higher test scores in the eighth grade and greater increase over time than White students across all subject areas (Fan, 2001). Hispanic students, on the other hand, had lower test scores in the eighth grade and smaller increases over time than both Asian and White students across all subject areas. Similar results were found with composite scores of reading, math, and science such that Asians had the highest initial test scores in the eighth grade and greatest increases over time, followed by Whites, and then Hispanics (Hong & Ho, 2005). When pair-wise comparisons were made on these differences using Cohen's *d* index, (Cohen, 1988), the mean differences between Asians and Whites were small to medium for both the initial test scores and increases over time, whereas the differences between Asians and Hispanics were large for both initial levels and changes over time. The mean differences between Whites and Hispanics were large for the initial test scores and small for the changes over time. In other words, these results suggest that compared to Whites, the advantage of Asians, and the disadvantage of Hispanics, on test scores in the eighth grade, increased during high school.

Although no study has examined whether there are differing academic trajectories among Asian Americans across ethnic subgroups, Zhang (2003), using NELS:88 data, examined generational differences among Asian immigrant students in the rates of changes in test scores. The results showed that first- and second-generation students had similar growth rates in math, reading, and science test scores after controlling for socio-economic factors, ethnic origin, and language fluency at each grade level. Second-generation, however, had higher rates of change in social studies than the first-generation.

The math and science test scores of first- and second-generation Asians increased at significantly higher rates than that of their third-generation counterparts, and social studies scores of second-generation youth also increased at a higher rate than did third-generation youth.

In sum, although numerous studies have investigated differences in academic achievement across pan-ethnic groups as well as across Asian ethnic subgroups and generational status at one point in time or at a particular grade level, there is a lack of research examining longitudinal trajectories of achievement during high school. The understanding of how school grades change over time is especially limited because no study has assessed the achievement trajectories using school grades. Therefore, longitudinal research on academic achievement that is sensitive to both across and within ethnic group differences is needed to increase our understanding of immigrant students' achievement trajectories during high school.

Financial and Human Capital

Studies have used socio-economic (SES) factors such as family income, parental education, and family structure (e.g., single-parent status) to represent or control for differences in financial and human capital. Controlling for these factors is important when examining academic performance levels for the following two reasons. First, socio-economic factors have a profound influence on academic achievement (e.g., Fuligni, 1997; Glick & White, 2003; Gregory & Weinstein, 2004; Kao & Thompson, 2003; Kao & Tienda, 1995; Mau, 1997). That is, higher socio-economic factors are generally associated with higher levels of school outcomes. Second, the levels of socio-economic

factors vary in great degree across ethnic-generational groups. Because these factors are positively associated with achievement levels, socio-economic factors often help to explain a substantial proportion of the variation in educational outcomes across ethnic-generational groups (Catsambis, 2001; Kao & Thompson, 2003; Mare & Winship 1988). For example, academic performance of Hispanics became comparable to that of Whites after taking SES into account (Kao et al. 1996; Warren, 1996). Thus, although the lower academic performance of Hispanics is problematic, their academic performance was comparable to that of Whites from similar SES backgrounds in some studies. Similar findings were found for Asians as well (Kao, 1995). Their socio-economic advantage partially explained the relatively high academic performance of Asians, at least compared to other ethnic minority groups. However, socio-economic factors did not explain all of the ethnic-generational group differences on academic performance. In other words, some of the gaps in academic performance between ethnic groups remained unexplained even after taking SES into account (e.g., Blair & Qian, 1998; Broh, 2002; Caplan, 1991; Fuligni, 1997; Fuligni & Witkow, 2004; Kao & Tienda, 1995; Mouw & Xie, 1999; Zhang, 2003). Therefore, although socio-economic factors are associated with academic performance, there is clearly a place for explanations that do not rely solely on financial and human capital (Kao & Thompson, 2003).

In addition, recent studies have suggested a lower, but wider range of SES among more recent immigrants compared to previous cohorts. That is, although disadvantages in SES among immigrant families have long been reported, immigrants in 1990, compared to those in 1980, on average were even more disadvantaged with more people positioned

at both extreme ends (Glick & White, 2003). In 2000, immigrants were more than twice as likely to lack a high school education as natives. At the same time, however, about the same proportion of native-born and foreign-born populations in 2000 had bachelor's degrees or higher (U.S. Census Bureau, 2004). Therefore, in order to understand differences in academic performance across ethnic-generational group, it is essential to first understand the levels and the effects of socio-economic factors.

Differences in Levels

Examining the levels of family income between Asian Americans and Whites, studies have found that first-generation Asian immigrants had lower, second-generation had similar, and third-plus-generation had higher family incomes than Whites that were third generation and beyond (Pong, Hao, & Gardner, 2005). Within Asian ethnic groups, Blair and Qian (1998) reported that family income was the highest for Koreans (approximately $39,350/year), followed closely by Filipinos (approximately $38,150/year), and then by Chinese (approximately $30,850/year). Between Hispanics and Whites, Grodsky et al. (2009) found lower family incomes for Hispanics compared to Whites. Similar to Asians, family income was higher for later generations of Hispanics. That is, first-generation immigrants had the lowest family incomes, followed by second-generation, and third-generation had the highest incomes. However, unlike Asians, even the third-generation immigrants had lower family incomes than Whites.

In relation to family income, some researchers have examined home resources for education, which can include the presence of place to study, books, home computers, and newspapers (Teachman 1987; Stevenson and Stigler 1992). Teachman (1987) argued that

the availability of home resources creates an environment conducive to studying by displaying a positive orientation toward schooling. Thus, home resources may be different from family income and considered a type of *social* capital through which parents convey the importance of education to their youth. Teachman, however, stated that parents with more education and income are probably more motivated to provide home resources for their children's education, thus suggesting an overlap between family income and home resources. Nevertheless, examinations of family income and home resources indicated the possibility that home resources have a different meaning than family income. For example, Kao (1995) found that more Asian Americans reported providing an educational environment for their children (i.e., places to study and personal computers) than Whites, although they had similar levels of family income. In addition, Asian Americans were more likely to have money saved for post-high-school education than Whites. Within Asian American subgroups, more Chinese and Korean Americans reported providing youth with a place to study and a personal computer than Whites did. Although more Filipino Americans also reported providing a place to study for their children than Whites did, a similar proportion of Filipino Americans and Whites reported providing a personal computer. Similarly, Chinese and Korean Americans had more money saved for their children's eventual post-high-school education than Filipino Americans and Whites, who had similar amounts saved.

Examining the levels of parental education, research has found that Asian American parents had higher educational attainment than White parents. Pong, et al. (2005) found, using another nationally representative data set (i.e., the National

Longitudinal Study of Adolescent Health), that all generations (i.e., first-, second-, and third-plus-generations) of Asian Americans reported higher parental education than third-plus-generation Whites. Other studies have also found that Asian American youth are extremely advantaged in terms of parental education (Kao et al., 1996; Warren, 1996). In addition, more detailed examinations of parental education between Asian Americans and Whites were conducted by Kao (1995) using the NELS:88 data. Examining the proportion of parents at each educational attainment level, Kao found that Asian American parents (49.3%) were more likely to be college graduates than White parents (35.0%). But, at the same time, Asian American parents (8.4%) were more likely to have less than a high school diploma than White parents (5.5%). These results support the educational and SES bifurcation reported above for more recent cohorts of immigrants. Kao (1995) also found striking differences across Asian American subgroups. First, more Chinese parents (12.6%) completed less a than high school diploma compared to Korean (2.2%) and Filipino (1.1%) parents. Second, Chinese parents (43.4%) were less likely to be college graduates than Korean (64.4%) and Filipino (59.6%) parents. The same pattern was found regarding the average years of schooling completed. That is, Korean parents (15.9 years) had the highest averages followed closely by Filipino parents (15.5 years), and then by Chinese parents (14.9 years). All three groups, however, had higher average years of schooling completed than Whites (14.6 years). Lower educational levels of Chinese parents, as well as their disadvantages in family income, compared to Korean and Filipino parents may be due to the change in their migration patterns. That is, more recent immigration of Chinese in the last decade has been increasingly from mainland

China rather than Taiwan and Hong Kong, in which fluency (i.e., education and income) levels have been quite high (Lai & Arguelles, 2003). Although Blair and Qian (1998) found similar patterns across Asian American ethnic subgroups, they concluded that these three ethnic subgroups had very similar levels of parental education because all these groups, on average, had at least one parent with some college education. In contrast to Asian Americans, all generations of Hispanics had lower parental education than third-plus-generation Whites (Pong, et al., 2005). There is, however, some evidence that parental education differs across generations of Hispanics. Grodsky et al. (2009) found that higher proportions of first- and second-generation parents completed less than high school degree than their third-generation counterparts. Third-generation Hispanic parents, on the other hand, were more likely to have some college education than first- and second-generation parents. Furthermore, Hispanics, especially Mexican Americans, were found to be the most disadvantaged in terms of parental education (Kao & Thompson, 2003; Fuligni, 1997).

Similar patterns were found for family structure across pan-ethnic groups, such that all generations of Asian Americans were more likely, and all generations of Hispanics were less likely, to be from two-parent households than third-plus-generation Whites (Pong, et al., 2005). Across Asian subgroups, Chinese, Korean, and Filipino Americans reported similarly low proportions of single parent households (Blair & Qian, 1998). More specifically, only 7 to 9 percent of Asian American families were headed by a single parent. Comparing across generational groups within Hispanics, Grodsky et al.

(2009) found that first-generation youth were somewhat more likely to live in single-parent household than second- and third-generation Hispanics as well as Whites.

These results about the levels of socio-economic factors suggest that Asian Americans, especially Korean and Filipino Americans, are somewhat advantaged in terms of their financial and human capital, whereas Hispanics are rather disadvantaged, compared to Whites. Although generational differences were less apparent, these types of capital seem to improve for later or successive generations of immigrant descent among Asian Americans and Hispanics.

Differences in Effects on Academic Performance

Concurrent Associations. Despite the large number of studies examining the levels of socio-economic factors, research has rarely examined differential effects of these factors on academic performance across ethnic-generational groups. Instead, researchers have often used socio-economic factors to control for financial and human capital that are often associated with differences in academic performance across these groups. In other words, researchers have often assumed similar impacts of socio-economic factors across ethnic-generational groups.

In studies that examined the effects of socio-economic factors as covariates, family income and parental education were positively associated with school grades and test scores (i.e., math, science, and reading) (Broh, 2002; Catsambis, 2001; Fuligni, 1997; Fuligni & Yoshikawa, 2003; Grodsky et al., 2009; Kao & Rutherford, 2007; Peng & Wright, 1994). Although no study has examined the differential effects of family income and parental education across pan-ethnic groups, Blair and Qian (1998) tested Asian

American subgroup differences across Chinese, Korean, and Filipino Americans. The results indicated that family income was positively related to GPA for Filipinos, but not for Chinese and Koreans. Parents' education, on the other hand, was positively associated with GPA for Chinese and Korean Americans, but not for Filipinos Americans. Kim (2002) also found positive associations between parental education and school grades among Korean American families.

Unlike family income and parental education, the effects of family structure were inconsistent across studies. For example, Peng and Wright (1994) found that youth from intact, or two-parent households and those from other family structures had similar combined reading and math test scores in eighth grade. Other studies, however, found that youth from intact households had higher school grades (i.e., math, science, and English) than others (Broh, 2002; Catsambis, 2001; Hao & Bonstead-Bruns, 1998). In addition, these studies also found higher math test scores, but similar or somewhat lower science and reading test scores, among youth from intact households (Broh, 2002; Catsambis, 2001; Grodsky et al., 2009; Kao & Rutherford, 2007). Although other variables included in their analyses might have caused the differential effects of family structure across these studies, one possible explanation for the inconsistent findings is the differences in reference groups. That is, because in regression analysis, coefficients represent the effects of the reference group, it is possible that the effects of family structure found in these studies could be due to which ethnic group was used as the reference group. More specifically, Peng & Wright (1994) used Asian Americans as their reference group and found no effect of family structure on academic outcomes, whereas

other studies used Whites as their reference group and found inconsistent, but generally positive effects. Because the effects of covariates represent the effects for the reference group, it is possible that family structure may have more positive effects on academic outcomes among Whites than Asian Americans. In support of this argument, Blair and Qian (1998) found that single-parent status was not related to school grades for Chinese, Korean, and Filipino Americans.

Longitudinal Associations. Longitudinal examinations found that socio-economic factors as covariates were not only associated with the initial academic performance levels, but were also related to growth of academic performance over time (Fan , 2001; Gregory & Weinstein, 2004). That is, youth with higher SES were likely to have higher initial academic performance and greater improvement over time than those with lower SES. No research, however, has examined ethnic-generational differences in the effects of SES using longitudinal data.

Furthermore, controlling for the effects of socio-economic factors is important in understanding the effects of parent-child interactions (*social* capital) related to school outcomes because financial and human capital is not only related to academic achievement, but also to the ways in which parents influence youth's academic performance (Fan, 2001). More specifically, research has found that family income was positively associated with parent-adolescent discussion about school (Broh, 2002). Parental education was also positively associated with parent participation at the school, parent-adolescent discussion about school, parent school involvement at home (e.g., helps with homework), intergenerational closure (i.e., parents' knowledge about and

communication with friends' parents), and parental monitoring (Chao & Kanatsu, 2008; Kohl, Lengua, and McMahon, 2000; Broh, 2002). On the other hand, single-parent status was negatively related to parent participation at the school, parent-adolescent discussion about school, intergenerational closure, and parental monitoring (Chao & Kanatsu, 2008; Kohl, Lengua, and McMahon, 2000; Broh, 2002).

Social Capital

Although research has examined social capital by measuring parental involvement in school related activities and parental monitoring, the findings were inconsistent across studies depending on the dimensions of parental involvement and how parental involvement and monitoring were operationally defined. For example, when research examined parent-adolescent discussions about school, some measures included their communications about current school activities, whereas others included their discussions about future academic plans. According to the distinction between *managerial* and *structural* types of parental involvement (Chao, 2000), parent-adolescent communication about current school activities is closely related to managing current academic issues. That is, communications about current school activities as well as parents' participation *at* the school, and helping and checking homework are considered managerial types of parental involvement, because they are more hands-on, direct types of involvement for assisting youth in the management of their school work. On the other hand, providing extra materials, after-school tutoring, computers, and educational software is a structural type of involvement designed to provide an enriching educational environment. Discussion about future academic plans can also be considered as a structural type of

involvement because it entails more proactive or future-oriented academic *planning* that is more relevant to fostering an academic environment rather than management of current schoolwork. Therefore, the findings in previous studies have to be carefully interpreted.

Differences in Levels

Concurrent Comparisons. Parents' participation at the school is the most examined aspect of the managerial types of parental involvement, and specifically includes parents' involvement in the PTO, attendance at school events, and communication with school personnel. Research, however, has reported inconsistent findings for this type of managerial involvement. First, Pong, et al. (2005) found that first- and second-generation Asian Americans had similar levels of participation at the school as third-plus-generation Whites among seventh to twelfth graders, whereas third-plus-generation Asian Americans had higher levels. All generations of Hispanics, on the other hand, reported lower participation at the school than third-plus-generation Whites (Pong, et al., 2005). Second, Kao and Rutherford (2007) found that compared to third-plus-generation Whites, first-generation Asian Americans and all generations of Hispanics had lower participation at the school at eighth grade, whereas second- and third-plus-generation Asian Americans had similar levels. After controlling for gender, family income, and parental education, these differences were no longer significant for Hispanics, though the differences for first-generation Asians remained. In addition, first- and second-generation Whites didn't differ from their third-generation counterparts. Third, Chao, et al. (2009) found that first- and second-generations of Chinese, Korean, and Filipino Americans reported lower parental participation at the school than third-

plus-generation Whites at ninth, tenth and eleventh grades. Similarly, Mau (1997) also found that participation at the school was lower for Asian immigrants and U.S.-born Asian Americans than Whites at tenth grade. These findings suggest that both Asian American and Hispanic parents are less likely to participate at school events and activities than White parents. Later generations of Asian American parents, however, may be more likely to participate at the school than earlier generations.

Similar patterns were found in the examinations of *parent-adolescent communications about current school activities.* For example, Kao (1995) found that Asian parents were less likely to discuss current school experiences with their youth than White parents at eighth grade. Among Asian subgroups, Chinese and Korean parents were less likely to discuss current school experiences than Filipino parents, who were similarly likely as White parents (Kao, 1995). Mau (1997) also found that Asian immigrants and U.S.-born Asian Americans were lower on discussions about current school activities than third-plus-generation Whites at tenth grade. However, the patterns were not always consistent. Pong, et al. (2005) found that first- and second-generation Asian Americans reported higher levels of discussions about current school activities than third-plus-generation Whites, whereas all generations of Hispanics and third-plus-generation Asians had similar levels.

Other managerial types of parental involvement include *helps and checks homework.* Similar to participation at the school, research has found lower levels of helps with homework for first- and second-generations of Chinese, Korean, and Filipino Americans than third-plus-generation Whites at ninth, tenth, and eleventh grades (Chao,

et al., 2009; Mau, 1997). Other study, however, found lower levels of helps with homework for Chinese and Korean American parents, but similar levels for Filipino American parents, than White counterparts (Kao, 1995). Checks homework was similar between first- and second-generations of Chinese, Korean, and Filipino Americans and third-plus-generation Whites (Chao, et al., 2009).

Parent-adolescent discussion about future academic plans is the most tested structural types of parental involvement. Mau (1997) found that Asian immigrants and U.S.-born Asian Americans were higher on discussions about plans for college than third-plus-generation Whites at tenth grade. Similarly, Chao, et al. (2009) found that first- and second-generations of Chinese, Korean, and Filipino Americans, with the exception of first-generation Filipinos, had higher levels of discussions about plans for college than third-plus-generation Whites. Examining NELS:88 data for eighth graders, however, Kao (1995) found that Asian parents were less likely to discuss high school and post-high-school plans with their youth than White parents. Among Asian subgroups, Chinese and Korean parents were less likely to discuss future school plans than Filipino and White parents, who had similar levels (Kao, 1995).

Chao, et al. (2009) also examined other structural types of parental involvement and found that first- and second-generations of Chinese and Korean parents were more likely to *assign extra work* and *provide after school tutoring* to their youth than third-plus-generation White parents at ninth, tenth, and eleventh grades. Filipino parents, however, had similar levels of these types of involvement as their White counterparts. Similarly, Asian American parents were more likely to provide a home structure and

resources such as a place to study, a personal computer, and savings for college (Ho & Willms, 1996; Kao, 1995; Mau, 1997; Peng & Wright, 1994).

Although difficult to distinguish between managerial and structural types of parental involvement, some studies also examined whether parents set *rules about TV watch, chores, and homework*. In these studies, more Asian American youth reported having rules about TV watch and schooling (e.g., school grades) than White youth, whereas more White youth reported having rules about chores than Asian American youth (Kao, 1995; Mau, 1997). Among Asian American subgroups, Chinese and Korean youth were less likely to have rules about TV watch and chores than Filipino and White youth, who had similar levels (Kao, 1995).

Parents also influence youth's academic performance by monitoring their activities outside the family. This type of social capital has been examined by *intergenerational closure* (Coleman, 1988) or *parental monitoring*. Intergenerational closure refers to the networks in which parents interact with parents of their children's friends, thus increasing surveillance and knowledge of all children's activities in and out of school. Through such networks, parents transmit and reinforce common norms and values associated with academic success. Parental monitoring, on the other hand, is often measured by how much parents *actually know* or *try to know* youth's whereabouts, behaviors, and persons they hang out with. Thus, intergenerational closure is similar to parental monitoring because it measures parents' network and ability to know youth activities that allow parents to monitor youths' whereabouts and activities.

Comparisons across ethnic-generational groups indicated that intergenerational closure was lower for all generations of Asian Americans and Hispanics than third-plus-generation Whites, except for third-plus-generation Asians who had similar levels (Kao & Rutherford, 2007; Pong, et al., 2005). After controlling for gender, family income, and parental education, these differences remained the same for Asian Americans and became smaller, but still significant for Hispanics. Comparing generations of Hispanic immigrants, Grodsky et al. (2009) also found no differences across generations of Hispanics.

When examining the levels of parental monitoring across pan-ethnic groups, Ho and Willms (1996) reported higher levels of parental monitoring among Asian American and Hispanics compared to their White counterparts. Chao and Kanatsu (2008), however, reported that Asian American youth perceived lower parental monitoring than their White counterparts after controlling for socio-economic factors. Hispanics, similar to the findings by Ho and Willms, perceived higher parental monitoring than Whites. Among Asian American ethnic subgroups, Filipino Americans perceived lower parental monitoring than their Chinese American counterparts. The levels, however, did not differ between Korean and Chinese Americans. Moreover, Mexican and Central Americans reported similar levels of perceived parental monitoring.

The lower levels of intergenerational closure among Asian Americans and Hispanics compared to Whites may be caused by parents' English language fluency. Because intergenerational closure requires parents to communicate with other parents, parents who have limited English fluency may feel reluctant to develop this network with

other parents who are not of the same linguistic background. Because research has found higher levels of parental monitoring among immigrant parents than their White counterparts, it is possible that immigrant parents practice this type of social capital in different ways. That is, immigrant parents may monitor youth's activities not through network of parents, but through other network such as their siblings, family members, and other relatives.

Finally, although it is not originally included as a component of social capital, parental sacrifice may be especially important for understanding immigrant students' academic achievement. Researchers have argued that many immigrant students feel obligated to succeed in school because their parents have made immense sacrifices to provide better educational, career, and financial opportunities (Kao, 1995; Leong, Chao, & Hardin, 2000; Zhou & Bankston, 1998). If this is true, parental sacrifice should, at least partially, explain some of the variations in academic achievement among immigrant students. A few studies that examined the concept found higher, more pronounced perceptions of parental sacrifice among immigrants than Whites (Kao, 1995; Zhou & Bankston, 1998). Also, in a qualitative study of approximately 100 Chinese American and White parents, Chao (1996) found that only Chinese parents brought up parental sacrifice as part of their explanations of why their Chinese American children do well in school. That is, Chinese parents, but not White parents, reported their willingness to invest everything for their children's education. When research examined youth's perceptions of obligation to succeed, it found that Asian American and Hispanic youth expressed a more intense sense of duty to support and provide assistance to their family

than their White counterparts, even after controlling for their SES (Fuligni et al., 1999; Hardway & Fuligni, 2006; Phinney, Ong, & Madden, 2000; Schneider & Lee, 1996; Tseng, 2004).

Changes over time in levels. Crosnoe (2001) examined the longitudinal change in adolescents' perceived parental involvement during high school across curriculum tracks (i.e., college-preparatory, general, and remedial) and pan-ethnic groups (i.e., Asian American, African Americans, Hispanics, and Whites). The measure of parental involvement included adolescents' reports of 1) participation at the school, 2) helps with homework, 3) helps with course selection, 4) knowledge of adolescents' well-being in school, and 5) attending adolescents' sports or school activities. When all the groups were examined as a pooled sample, the levels of parental involvement, as composite scores, were the highest during the first year and declined over adolescents' high school careers, suggesting the general decline in this type of social capital. This pattern, however, was only found among high achieving students who were taking college-preparatory math courses during freshman year. Of those who were taking general or remedial courses during their freshman year, the change over time was not significant. Students who received higher grades in college-preparatory courses had particularly high parental involvement during the first year but greater declines over time. When parental involvement items were examined individually, Crosnoe found a decreasing pattern in all of the above mentioned parental involvement dimensions except for parents' attendance in sports or school activities, which remained unchanged during high school. Crosnoe then examined pan-ethnic group differences within each curriculum track. When

compared to Whites, Asian Americans who were either in general or college-preparatory courses reported lower levels of initial parental involvement, but their rates of change didn't differ from Whites in any of the curriculum track groups. In other words, Asian American parents were less involved in school related activities than White parents as long as their youth were doing well in school. When youth were in remedial courses, Asian American and White parents had similar levels of involvement in school.

Chao, et al. (2009) also examined changes in the levels of parental involvement dimensions for third-plus-generation Whites between ninth and tenth, and tenth and eleventh grades. They then tested if patterns of first- and second-generations of Chinese, Korean, and Filipino Americans differed from them. The results indicated that all the managerial types of parental involvement (i.e., participation at the school, helps homework, and checks homework) and assigns extra work decreased over time for Whites, whereas discussion about plans for college increased, and providing extra material and providing after school tutoring remained the same. Although some ethnic-generational differences were found, these changes were somewhat similar across groups. For example, there was no ethnic-generational difference in the changes of participation at the school and helps with homework from ninth to tenth and from tenth to eleventh grades. In addition, when one group indicated relatively larger decrease from ninth to tenth grades, the group tended to show relatively smaller decrease from tenth to eleventh grades, thus retaining the similar differences over time. Therefore, combined with the consistent ethnic-generational differences in the levels at each time point, these results

suggest that the ethnic-generational groups have similar changes in parental involvement dimensions from ninth to eleventh grades.

No research has examined ethnic-generational differences in how parental monitoring and parental sacrifice change over time during high school. Examining parental monitoring, however, Catsambis (2001) found that parental supervision of youth's after school activities, similar to parental involvement in school, generally reduced during high school as they acquired more independence.

In summary, the findings were mixed for parental involvement dimensions and parental monitoring across ethnic-generational groups. The results, however, generally supported the cultural explanations of managerial and structural types of parental involvement dimensions. That is, Asian American, especially Chinese and Korean, parents were less likely to use managerial types and more likely to use structural types of parental involvement. Parental involvement of Filipino American parents, on the other hand, was similar to White parents. In addition, Hispanics were different from Asian American and Whites, such that they had lower levels of managerial types and similar levels of structural types of parental involvement than Whites. Ethnic-generational differences were less clear on parental monitoring and parental sacrifice because of lack of studies and inconsistent findings. Longitudinal examinations of social capital were also scarce, but there was a general decreasing pattern in the levels during high school.

Differences in Effects on Academic Performance

Concurrent Associations. Most research that included social capital in the examinations of academic performance had it as covariates, thus not testing differential

effects across ethnic-generational groups. In such research, academic performance during high school was positively associated with participation at the school (Catsambis, 2001; Ho & Willms, 1996; Pong, et al., 2005; Stevenson & Baker, 1987), parent-adolescent discussion about school (Broh, 2002; Catsambis, 2001; Ho & Willms, 1996; Keith, et al., 1993; Keith & Lichtman, 1994; Muller & Kerbow, 1993; Pong, et al., 2005), and parental supervision of academic achievement progress (Astone & McLanahan, 1991; Catsambis, 2001; Fehrmann, Keith, & Reimers, 1987; Ho & Willms, 1996). Academic performance, on the other hand, was negatively associated with parents' communication with school personnel (Catsambis, 2001; Muller, 1993; Ho & Willms, 1996), checks and helps with homework (Mau, 1997; Muller, 1993), and parental monitoring of after-school activities (Broh, 2002; Muller, 1993).

Among the studies that examined the differential effects of social capital across ethnic groups, Yan and Lin (2005) examined the effects of parents' participation at the school using NELS:88 data. Their results indicated that eighth grade participation at the school was positively associated with twelfth grade math test scores net of SES and previous achievement levels for Whites, but not for Asian Americans and Hispanics. Kao and Rutherford (2007) also found positive effects on eighth grade school outcomes (i.e., school grades and test scores) among third-plus-generation Whites, net of gender, socio-economic factors, and school location (e.g., urban and rural). When Kao and Rutherford tested ethnic-generational differences between third-plus-generation Whites and all generations of Asian Americans and Hispanics, the effects on school grades were less positive for first-generation Asians Americans. Differences were not found for other

groups, specifically between third-plus-generation Whites and second- and third-generations of Asian Americans, as well as all generations of Hispanics. Similarly, Mau (1997) found positive associations between participation at the school and test scores for Whites, but no association for first-generation Asian immigrants, and somewhat negative associations for U.S.-born Asian Americans. In a smaller scale study, Kim (2002) also found no associations between participation at the school and school grades among Korean American families. Thus, these studies have consistently found positive associations between parents' participation at the school and academic performance among Whites. The associations, however, were less positive or else not significant among Asian Americans and Hispanics. In their meta-analyses for ethnically pooled sample, Fan and Chen (2001) found that participation at the school was the strongest predictors of children's school performance compared to parent-child communications about current school activities and family rules about TV, school grades, and chores. This finding, therefore, might be lead by the positive associations among Whites.

Among the other managerial types of parental involvement, Yan and Lin (2005) also found positive associations between checks homework in eighth grade and math test scores in twelfth grade for Whites, but not for Asian Americans and Hispanics. Kim (2002), on the other hand, found positive effects of checks homework on school grades among Korean Americans.

Although this dissertation study attempts to distinguish parent-adolescent discussions about future academic plans from communications about current school activities, research has only examined the effects of parent-adolescent discussion about

school by including both dimensions of parental involvement. In such research, parent-adolescent discussion about school in general was positively related to later math test scores for Whites, but not for Asian Americans and Hispanics (Yan & Lin, 2005). Mau (1997) also found positive associations for Whites, but no association for Asian immigrants, and somewhat negative associations for U.S.-born Asian Americans. Kim (2002), however, found positive associations between discussions about school and school grades among Korean Americans. Therefore, further examinations are needed with parent-adolescent discussions about future academic plans to test whether the effects of this parental involvement differ from previous findings, and if there are ethnic-generational variations.

Research that examined the effects of family rules also reported inconsistent findings. For example, Kim (2002) found positive effects of rules about TV and homework on school grades among Korean Americans. Yan and Lin (2005), however, found no effects for composite scores of family rules about TV, school grades, and chores on later math test scores for all ethnic groups (e.g., Whites, Asian Americans, and Hispanics).

Similar to participations at the school and discussions about school, research has found more positive associations for parental monitoring. In the examinations of intergenerational closure, research has found positive associations for GPA and test scores among Whites, whereas no associations were found among Asian Americans and Hispanics, net of socioeconomic factors (Kao & Rutherford, 2007; Yan & Lin, 2005). In fact, first-generation Asians, in particular, had somewhat less positive associations

compared to third-plus-generation Whites (Kao & Rutherford, 2007). Differences were not significant between third-plus-generation Whites and second- and third-generations of Asian Americans, as well as all generations of Hispanics. Although intergenerational closure had no associations with academic performance for Asian Americans and Hispanics, research has found positive effects of parental monitoring on GPA (Kanatsu & Chao, 2007; Henry, Merten, Plunkett, & Sands, 2008; Plunkett, Behnke, Sands, & Choi, 2009). These results further suggest that parental monitoring may be better suited for measuring this dimension of social capital among immigrant youth.

In summary, research has found stronger effects of social capital on academic performance among Whites compared to Asian Americans and Hispanics. The findings, however, were inconsistent for some social capital dimensions, especially when operational definitions differed across studies. Furthermore, interpretations of these effects should be done with caution because most of them represent concurrent associations. Thus, even when negative associations were found, the results may not mean that these parental practices lead to lower academic achievement. Rather, these negative associations may reflect parents' responses to their youth's lower academic achievement. For example, parents would be more likely to check their children's homework if their children are getting bad grades or having difficulty. Thus, directionality of the effects needs to be further examined using longitudinal designs.

Longitudinal associations. Only two studies have examined the longitudinal effects of social capital on academic performance during high school. Both Hong and Ho (2005) and Fan (2001), using NELS:88 data, examined the effects of parental

involvement dimensions and parental monitoring (only in Fan) on the initial levels and changes over time of test scores from eighth to twelfth grades across pan-ethnic groups (i.e., Asian American, Hispanic, African Americans, and White). Hong and Ho examined combined reading, math, and science test scores and found that, for Asian Americans, parents' participation at the school and parent-adolescent discussion about school were positively related to both initial level and growth over time in their test scores. For Whites and Hispanics, on the other hand, only parent-adolescent discussion about school was related to both initial level and growth in their test scores. Similarly, Fan examined trajectories of test scores in reading, math, science, and social studies. The results indicated for the overall sample, that parent-adolescent discussion about school was positively associated with initial levels, but not with growth in test scores in all subject areas net of SES. Participation at the school and parental monitoring, however, had generally no association with test scores. Examining each ethnic group separately, however, the positive association between parent-adolescent discussion and the initial test scores was found only for Whites. In addition, there was a positive association between parental monitoring and growth in math test scores for Asian Americans and reading test scores for Hispanics. Therefore, between the two studies examining effects over time, there appear to be differential effects of parental involvement on academic performance trajectories across pan-ethnic groups. These findings, however, might be caused by the difference in the way test scores were examined. That is, Hong and Ho (2005) examined test scores as a composite score, whereas Fan (2001) examined them separately. Fan and Chen (2001), in their meta-analyses, found that the relationship between parental

involvement and academic achievement was stronger when academic achievement was represented by more global indicators of academic achievement (e.g., school GPA), than by academic subject-specific indicators (e.g., math grade). Although their meta-analyses did not include longitudinal studies, it is likely that the composite test scores used by Hong and Ho might have increased the significance of the over time associations between parental involvement and academic performance.

Purpose and Hypothesis

The primary purpose of this dissertation study is to examine the academic trajectories among first- and second-generation immigrant students over the course of high school. Despite the dramatic increase in the proportion of youth from immigrant families in our school system (e.g., Hernández, Denton, & Macartney, 2007), our knowledge about their academic trajectories during high school is extremely limited. In fact, no study has examined the academic trajectories of school grades among high school students, and whether there is variation in their initial performance, as well as changes over time, due to ethnic-generational differences. Such examination is important because research has found ethnic and generational differences in high school achievement, or specifically their GPAs. Thus, in order to achieve this aim, this study will examine the trajectories of eight GPAs from the fall semester of ninth grade to the spring grade of twelfth grade among first- and second-generation immigrant students of Chinese, Korean, Filipino, Mexican, and White (Europe/U.K./Australia/Canada, and the former USSR). Third-plus-generation White students will also be examined as the reference group in relevant analyses.

Another aim of this dissertation study is to increase understanding of how the factors of financial, human, and social capital may account for possible ethnic-generational differences in academic trajectories. This study is especially interested in the impact of social capital dimensions as these dimensions include more socio-culturally relevant measures for immigrant groups. For example, this study includes both the *managerial* and *structural* types of parental involvement in school related activities. Inclusion of the *structural* type of parental involvement is especially important for understanding the effects of Asian immigrant parents because they are more likely to use this type of parental involvement than the *managerial* type (Chao, 2000). Also, previous findings suggest that parental monitoring is related to achievement for youth from immigrant families (e.g., Ho & Willms, 1996; Kao & Rutherford, 2007). Finally, research has found higher, more pronounced perceptions of parental sacrifice among immigrants than their third-plus-generation White counterparts (e.g., Zhou & Bankston, 1998). Because research has reported positive relations between perceived parental sacrifice and feeling obligated to do well in school (e.g., Leong, Chao, & Hardin, 2000), parental sacrifice may be strongly associated with academic performance among first- and second-generation immigrant youth.

Finally, this study also seeks to understand possible variation in academic performance over the course of high school within each of the generations of ethnic groups and the factors that may account for the differences in their academic trajectories. Most research that compared academic performance across ethnic immigrant groups assumed homogeneity within each group. However, there may be important variation

within different ethnic-generational groups in their academic trajectories. This study, therefore, will examine variations in academic trajectories and the factors that help explain successful academic progress for each ethnic-generational group.

Academic Trajectories across Ethnic-Generational Groups

First, differences in academic trajectories will be examined between the ten immigrant groups (i.e., first- and second-generations of Chinese, Korean, Filipino, Mexican, and White/European) and third-plus-generation Whites by having the immigrant groups as dichotomous predictors in the Latent Growth Modeling (LGM). More specifically, the dichotomous predictors of immigrant groups will be regressed onto the two latent factors; average grades in the fall semester of ninth grade (i.e., initial level) and average changes over time (i.e., growth). The first model will determine these two latent factors for third-plus-generation Whites and how these latent factors differ among the immigrant groups, controlling for demographic factors (i.e., school, cohort, and gender of adolescent and primary caregiver). In other words, this analysis examines ethnic-generational variations in the trajectories of GPAs before accounting for financial, human, and social capital.

Hypothesis 1: Both generations of Chinese and Korean immigrant youth will have higher, Filipino and White/European immigrant youth will have similar, and Mexican immigrant youth will have lower average grades initially (in the fall semester of ninth grade) than third-plus-generation White youth. Regarding the growth of GPAs, previous research has found higher rates of increase among Asian American students than Whites in the examinations of test scores (Fan, 2001; Hong & Ho, 2005). However, because

Asian youth, especially those from China and Korea, are expected to have very high initial GPAs at ninth grade, their GPAs will likely show little improvement. Therefore, GPAs of both generations of Chinese and Korean immigrant youth will on average show less increases over time than third-plus-generation Whites. On the other hand, because Mexican youth are expected to have lower initial GPAs, they may show the greatest increases over time in their GPAs. Nevertheless, research has found that Hispanics have less positive rates of changes in test scores over time than Whites (Hong & Ho, 2005). Although this model does not allow generational comparisons within each ethnic group, it is expected that first-generation Chinese and Korean youth will have greater advantages in initial GPAs than their second-generation counterparts because of higher GPAs found for these youth in previous studies (Alva, 1993; Chao, 2001; Fuligni, 1997; Kao & Tienda, 1995; Mau, 1997; Padilla & Gonzalez, 2001; Rumbaut, 1995). The disadvantages of Mexican immigrant youth will also be smaller for first-generation youth than second-generation youth for the same reason.

Second, once differences are determined between immigrant groups and third-plus-generation Whites for initial level and growth of GPAs controlling for demographic factors, the following types of capital will be added to the models, in two steps, as additional predictors of the two latent factors (i.e., initial level and growth): 1) *financial* and *human* capital (i.e., home ownership, parents' employment status, parents' educational levels, two-parent household, adolescents' and parents' years in the United States, and adolescents' and parents' English fluency) and 2) *social* capital (i.e., parental involvement in school, parental monitoring, and parental sacrifice). These analyses will

test whether financial, human, and social capital can explain or account for the ethnic-generational variations between the immigrant groups and third-plus-generation White youth in academic trajectories.

Therefore, in the second model, only financial and human capital factors, in addition to the demographic factors, are added to the LGM model. If financial and human capital explains the group differences, the immigrant group predictors should no longer have significant effects on the two latent factors.

Hypothesis 2: Financial and human capital will partially explain ethnic-generational differences for the initial level and growth of GPAs. They are, however, not expected to entirely explain the group differences because social capital is expected to influence immigrant youth's academic achievement over and above financial/human capital. In addition, changes in ethnic-generational differences are not expected to be equal across groups. For example, differences between both generations of Chinese and Korean youth and third-plus-generation White youth for the initial levels of GPAs are expected to be somewhat reduced, but remain significant. This is because these Asian immigrant groups are often found to have similar, if not higher, levels of socioeconomic status as third-plus-European Americans. The differences between both generations of Mexican youth and third-plus-European American youth for the initial levels, on the other hand, are no longer expected. That is, financial and human capital will explain the ethnic differences between these groups. Similar to the initial levels, differences in the growth of GPAs are expected to diminish or be reduced more so between Mexican and third-plus-generation White youth than between Chinese and Korean youth and the

reference group. In other words, Mexican and third-plus-generation White youth will have similar rates of growth after accounting for financial and human capital. However, the more negative rates of growth expected for Chinese and Korean youth will remain significant. Although this model does not provide significance tests, the amount of ethnic-generational variations explained by financial and human factors are expected to be greater among first-generation immigrant groups because of their greater disadvantages in these factors.

In the third model, social capital will be added to the model, in addition to the demographic factors and financial and human capital, to test whether the remaining ethnic-generational differences can be explained by social capital factors.

Hypothesis 3: Social capital will explain the remaining ethnic-generational variations for the initial levels and changes over time in GPAs. That is, both generations of Chinese and Korean youth will have similar initial levels and changes of GPAs as third-plus-generation White youth, once social capital factors are also accounted for.

Academic Trajectories across Generation of Immigrants

In order to determine generational differences within each ethnic group, the same process of LGM models will be repeated for each ethnic group, with a dichotomous generation variable as a predictor instead of immigrant groups. More specifically, the first model will control for demographic factors, the second model will add financial and human capital to the first model, and the third model will add social capital to the second model. Thus, in these models, the two latent factors (i.e., initial level and growth) are compared between the first- and second-generations within each ethnic group and tested

whether financial, human and social capital explains the generational differences once they are added to the model.

Hypothesis 4: When demographic factors are controlled, first-generation Chinese, Korean, and Mexican youth are expected to have higher initial GPAs than their second-generation counterparts because of higher GPAs found for these first-generation immigrant youth in previous studies (Alva, 1993; Chao, 2001; Fuligni, 1997; Kao & Tienda, 1995; Mau, 1997; Padilla & Gonzalez, 2001; Rumbaut, 1995). However, the generational difference is not expected among Filipinos and Whites (Kanatsu & Chao, 2005; Kao & Rutherford, 2007). No research has tested generational differences in changes over time of academic trajectories. Therefore, specific predictions cannot be made for generational differences within ethnic groups.

Hypothesis 5: After adding financial and human capital to the model, the advantage among first-generation youth may actually increase for the initial levels due to their predicted lower financial and human capital than second-generation youth. Thus, generational differences in initial GPAs are expected to increase, once these types of factors are accounted for, particularly within Chinese, Korean, and Mexican.

Hypothesis 6: Once social capital is added to the model, generational differences within ethnic groups are expected to be non-significant as social capital factors are expected to account for the generational variation.

Exploring Academic Trajectories within Ethnic-Generational Groups

Furthermore, this study predicts that there will be further variation in initial level and growth of GPAs within each ethnic-generational group, or that there will be distinct

trajectory patterns within each group. Different patterns of academic trajectories will be explored using Latent Class Growth Analysis (LCGA) (Muthén & Muthén, 2000). LCGA, similar to cluster analysis, will identify classes of different trajectory patterns within a group. In other words, those who have similar trajectory patterns are grouped together to form a class. LCGA is a special case of Growth Mixture Modeling (GMM) where the growth factor (e.g., initial level and growth) variances within each latent class are zero (Muthén & Muthén, 2000). That is, LCGA allows no individual variation around the mean growth curves for each class. GMM, on the other hand, both estimates mean growth curves for each class and captures individual variation around these growth curves by the estimation of growth factor variances for each class. Muthén and Muthén (2000) argued that LCGA is useful as a first step in determining major types of trajectories because of this difference. No hypotheses for LCGA can be generated due to its exploratory nature. However, the analysis will extend our knowledge about heterogeneity of academic performance trajectories within ethnic-generational groups.

In addition, financial, human, and social capital may predict memberships in high achieving trajectory patterns in one ethnic-generational group, but may not be predictive of memberships in such trajectory patterns in another. Through multinomial logistic regression (logistic regression if only two patterns are found), this study will further determine whether the trajectory patterns found in each ethnic-generational group will be associated with different demographic characteristics, as well as different financial, human, and social capital factors. In multinomial logistic regression, the effects of these factors will be estimated as the likelihood of being in a certain class of trajectory patterns

compared to being in the reference class. More specifically, multinomial logistic regression standardizes the associations between the predicting factors and the reference trajectory patterns to zero, and provides the associations between the predicting factors and other trajectory patterns in the form of multinomial logistic regression coefficients and odds ratio. Similar to LGM models for examining across ethnic-generational groups, the factors for these analyses will be added in three steps: 1) demographic characteristics (i.e., school, cohort, gender of adolescent and primary caregiver), 2) financial and human capital (i.e., home ownership, parents' employment status, parents' educational levels, two-parent household, adolescents' and parents' years in the United States, and adolescents' and parents' English fluency), and 3) social capital (i.e., parental involvement in school, parental monitoring, and parental sacrifice). Again, no hypothesis can be generated for this analysis because it is based on the findings of the previous analysis.

METHOD

Participants

The total sample consisted of 3,454 ninth graders from eight different high schools in the greater Los Angeles area between 2002 and 2004 academic years. It is drawn from a larger longitudinal data set and included 751 Chinese Americans (276 first-generation and 475 second-generation), 708 Korean Americans (219 first-generation and 489 second-generation), 420 Filipino Americans (155 first-generation and 265 second-generation), 608 Mexican Americans (161 first-generation and 447 second-generation), and 967 White/European Americans (86 first-generation, 126 second-generation, and 755 third-plus-generation). White immigrant youth were mainly from European/former Union

of Soviet Socialist Republics (USSR) countries (see *Ethnicity* section under *Measures* (p.60-61) for the breakdown). Demographic characteristics are provided by ethnic-generational groups in Table 1a – 1b. The number of missing cases was 0 for cohort and school, 10 for gender of adolescents, and 47 for primary caregiver.

The mean age for the overall sample at time 1 or fall of ninth grade was 14.51 years old (*SD* = .44) with a range from 14.36 to 14.77 years old across ethnic-generational groups. This information was missing for 145 youth.

Procedures

In order to allow adolescents' participation in the study, consent from both parents and adolescents were required. A passive consent procedure was used with parents, asking that they respond to or send back consent forms only if they did *not* wish their children to participate. All parents received copies of the consent letter in English, Spanish, Chinese, and Korean along with a postage paid, pre-addressed envelope for returning the forms. Adolescents were also provided with an assent statement on the cover page of paper-and-pencil surveys. The same procedure was used for the annual adolescent survey from ninth grade to eleventh grade. The participation rate was high, at 80.6%. Of all adolescents eligible to participate, fewer than 9.3% either refused to participate or did not have parental consent; another 10.1% were either absent on the day of the study or did not receive their parental consent forms.

Adolescents were given 50 minutes (the whole class period) to complete their surveys in English. The surveys included items about their demographic characteristics, as well as financial, human, and social capital.

Measures – Generation and Ethnicity

Generation. Generation of adolescents was determined by three items that asked whether adolescents and their parents (i.e., one item for each parent) were born in the United States. Those adolescents who were not born in the United States were coded as first-generation. Those who were born in the United States, but had at least one parent born outside the United States, were considered as second-generation. Also, those adolescents who were born in the United States and had both of their parents born in the United States were coded as third-plus-generation.

Ethnicity. One item (‘‘what is your ethnic background’’) was used for assessing adolescents’ *racial/ethnic group*, which included 4 different racial groups (non-Hispanic Whites, Black, Asian, and Hispanic) with an additional 8 sub-ethnic distinctions among Asians, and 6 among Hispanics/Latinos. Because of limited sample size in other sub-ethnic groups, adolescents who reported their racial/ethnic background as Chinese, Korean, Filipino, Mexican, or White, and that they were either first- or second-generation immigrants (see above), will be included in this proposed study. Also, third-plus-generation Whites, who identified themselves as non-Hispanic White and were coded as third-plus-generation, were included in this study as the comparison group. Although further ethnic breakdowns for non-Hispanic Whites were not part of the survey, an additional item (pertaining to those youth or parents who were not born in the U.S.) for their/their parent’s country of birth indicated they were mainly from European/former Union of Soviet Socialist Republics (USSR) countries. More specifically, among the 86 first-generation White youth, 19 were from European countries, 54 were from former

USSR countries, 7 were from other countries (e.g., Iran, Egypt, and Taiwan), and 6 did not report. Among the 126 second-generation White youth, 42 were from European countries, 12 were from former USSR countries, 26 were from other countries (e.g., Iran, Colombia, Indonesia, and South Africa), and 46 did not report.

Measures – Demographic Characteristics

School and cohort. Dichotomous variables were created for *school* (8) and *cohort* (3). However, two of the eight schools (School 7 and 8) did not include youth from all ethnic-generational groups. Thus, these schools were combined with school 6, resulting in total of six dichotomous variables for *school*.

Adolescents' gender. Males were coded as "1" and females were coded as "0."

Gender of Primary Care Giver (PCG). Adolescents were asked to identify only one person who takes care of them *most* of the time. Answers could be chosen from 1 = *Mother*, 2 = *Father*, 3 = *Step-Mother*, 4 = *Step-Father*, or 5 = *Other*. If adolescents answered "Other," they were asked to specify who the person was. For this study, a dichotomous variable was created in which those who identified mother as the primary care giver were coded as "1," and all others were coded as "0."

See Table 1a and 1b for frequencies of demographic factors across ethnic-generational groups.

Measures – Financial and Human Capital

Homeownership. Adolescents who reported that their parent owned their homes were coded as "1," whereas those whose parent didn't own their home were coded as "0." The number of missing cases was 44 for homeownership.

Mothers' and fathers' employment status. Parents' employment status was assessed by one item for each parent asking, ''What is your mother's/father's present work situation?'' and included the following five options: 1 = *employed full-time*, 2 = *employed part-time*, 3 = *homemaker*, 4 = *student*, and 5 = *not currently working*. If adolescents reported that their parents were employed full-time or part-time, the parents were considered to be working (coded as "1"). If adolescents reported that their parents were either homemakers, students, or not employed, they were considered to be non-working (coded as "0"). The number of missing cases was 85 for mothers' employment status and 176 for fathers'.

Mothers' and fathers' education. For each parent, adolescents reported what was the highest level of education completed that included the following eight options: 1 = *no formal schooling*, 2 = *some elementary school*, 3 = *finished elementary school*, 4 = *finished middle school*, 5 = *finished high school*, 6 = *some vocational or college training*, 7 = *finished four-year college degree*, and 8 = *finished graduate degree*. The average score was calculated for the *parents' educational attainment level*. The number of missing cases was 217 for parents' education.

Living situation (two-parent household). Adolescents' living situation was assessed through an item asking whom the youth lived with that included seven options. The options were 1 = *Both my mother and father in the same household*, 2 = *Only my mother*, 3 = *My mother and stepfather*, 4 = *Only my father*, 5 = *My father and stepmother*, 6 = *Some of the time in my mother's home and some in my father's*, and 7 = *Other*. If adolescents answered "Other," they were asked to specify who the persons were. The

options of “Both my mother and father in the same household,” “My mother and stepfather,” and “My father and stepmother” were coded as “1,” representing two-parent household, whereas others were coded as “0.” The number of missing cases was 22 for living situation.

Adolescents’/Parents’ years in the United States were measured based on items that asked for adolescents’ birth date, parents’ current age, and the age at which adolescents and their parents arrived to the United States (e.g., “How old were you when you came to live in the U.S.?”). Current age for adolescents was calculated from their birth date and the date survey was conducted. Years in the U.S. were then calculated by subtracting the arrival age from their current age. For those who were born in the U.S. (i.e., second-generation youth and U.S.-born parents), their current age was used as their years in the U.S. Because of the high missing rates for the parents, the average of mothers’ and fathers’ years in the U.S. was calculated to represent *parents’ years in the Unites States*. Either mothers’ or fathers’ years in the U.S. was used when the other was missing. The number of missing cases was 354 for adolescents’ years in the United States and 1463 for parents’.

Adolescents’/Parents’ English language fluency is based on the following two items for each parent and also child: ‘‘How well do you (1) speak and understand English when others speak it to you, and (2) read and write English?’’ All responses were based on a 5-point scale with 1 = *not at all well*, 2 = *slightly well*, 3 = *moderately well*, 4 = *very* well, and 5 = *extremely well*. The average score was calculated between the two items (i.e., speak/understand and read/write) for their overall English fluency. The average

score of mothers' and fathers' English fluency was calculated for the *parents' English fluency*. The number of missing cases was 462 for adolescents' English language fluency and 481 for parents'.

See Table 2a and 2b for frequencies and means (standard deviations) of financial and human capital across ethnic-generational groups.

Measures – Social Capital

Parental involvement in school. A total of 22 items were used for capturing youth's reports of both the managerial and structural types of involvement in school that their parents provide. Of these items, 16 were coded on a 4-point response scale (1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, and 4 = *Often*) (e.g., "my parents talks to me about plans after I graduate from high school," and "my parents volunteers at my school"). The other 6 items were dichotomous, yes (1) or no (0) responses (e.g., "Does your parents have rules about maintaining good grades?" and "Does your parent involve you in after-school study programs or tutoring?") (see Appendix I for the complete list of items). All 22 items were subjected to factor analyses with the Promax oblique rotation to determine the best fitting factor structure (structural solution) using the Mplus software 5.1 (Muthén & Muthén, 2007). The Promax rotation was used because it allows the factors to correlate (Tabachnick & Fidell, 2007). This was important because dimensions within each scale were expected to be related to each other, but distinct constructs. Because all the items were categorical, Muthén's (1984) approach to exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with categorical indicators was used.

First, exploratory factor analyses (EFA) were conducted for the sample as a whole, and then separately for each ethnic group. A combination of criteria was used to determine the number of factors to retain in the EFAs: 1) scree plots and the number of Eigen value greater than 1, 2) conceptual clarity, 3) simplicity (parsimonious model), and 4) models with items loadings at least .40 with no cross-loadings. Based on the results, the best fitting factor structure included four factors: 1) participation in school related activities (5 items); 2) home rules about TV, homework, and grade (3 items); 3) discussion about future academic plans (6 items); 4) extracurricular activities (3 items). The first two factors (i.e., participation in school related activities and home rules about TV, homework, and grade) were considered as managerial types of parental involvement, whereas latter two factors (i.e., discussion about future academic plans and extracurricular activities) were considered as structural types. Five remaining items were not included in these factors as they double-loaded on different factors across ethnic groups. However, "helps with homework when I ask" and "purchases extra books and materials for my schooling or education" were included in the later analyses as single item predictors because they represent typical managerial and structural types of parental involvement behaviors, respectively.

Next, based on the results of the EFAs, model fit of the best fitting factor structure was assessed through a series of CFAs for the whole sample, and then separately for ethnic-generational groups. The examinations of measurement invariance across groups were conducted at the item level, focusing on both item intercepts and factor loadings, in addition to the global level, looking at overall model fit. At the item level, a possible

ethnic variation in item intercepts and factor loadings were examined relying on modification indices of each item ($\chi^2 > 3.84$) and standardized expected parameter change (> 0.25). When item intercepts are different across ethnic groups, for example, it shows that a specific group has higher or lower average score for the item than other groups. Therefore, having a certain level of the item may have different meaning for the group compared to others. Differences in factor loadings, on the other hand, indicate variations in how representative the item is for the specific latent factor to which the item is loaded. Different factor loadings thus suggest a possibility that the latent factor has different meaning across groups. Once possible group variations were found for specific items (either intercepts or factors loadings), model fit indices were compared between the initial, constrained model and the model with these items freed across groups. To determine whether the model fit was better in one model over the other, the comparative fit index (CFI), Tucker-Lewis Index (TLI), and root mean square error of approximation (RMSEA) were compared between the models. CFI and TLI are goodness-of-fit indices, with higher values (maximum generally being 1) indicating better fit. RMSEA, on the other hand, is a badness-of-fit indicator, with lower values indicating better fit. For CFI and TLI, values above .90 are considered reasonably good fit (Browne & Cudeck, 1993; Tabachnick & Fidell, 2007). For RMSEA, values around .05 and below is considered good fit, whereas values between .05 and .10 indicate acceptable fit. Chi-square difference test was also performed between the models; however, the decision did not rely solely on this test as it is sensitive to sample size (Powell & Shafer, 2001).

The results of CFAs indicated that there were some ethnic-generational differences on the item intercepts, but no variation in the factor loadings. More specifically, under the factor on parents' participation in school related activities, second-generation Chinese were 19.3% of a standard deviation (SD) higher than other groups on "My parent visits the school for special events" after controlling for other factors and ethnic-generational groups. Similarly, first-generation Filipinos and Mexicans were 59.7% and 70.3% of an SD higher, respectively, on "My parent attends PTO/PTA meetings." First-generation Whites also were 85.7% of a SD higher on "My parent volunteers at my school." Moreover, second-generation Mexicans were 33.7% of a SD higher on "My parent talks to my teacher about how I am doing." On the other hand, second-generation Chinese were 33.5% of a SD lower on "My parent watched me in sports or other extracurricular activities." No variation was found for the factor on home rules about TV, homework, and grades. Under the factor "discussion about future academic plans," second-generation Mexicans were 55.2% of a SD higher than other groups on "My parent talks to me about plans after I graduate from high school." Also, second-generation Koreans were 33.6% of a SD higher, whereas first-generation Filipinos were 38.7% of a SD lower on "My parent has talked to me about what college I should attend." Finally, under the factor "extracurricular activities," first-generation Filipinos were 67.0% of a SD lower than other groups on "Does your parent enroll you in music classes outside of school?" Comparing the model fit indices between the CFAs before and after these intercepts were freed, CFI improved from 0.966 to 0.970, TLI improved from 0.957 to 0.960, and RMSEA improved from 0.046 to 0.044. The test of

chi-square differences also indicated that freeing the above intercepts one-at-a-time improved the model fit. Freeing the intercepts all-at-once, thus, resulted in better model fit, $\Delta X^2(10)=159.568$, $p < .001$. Therefore, these intercepts were freed in the later LGM models to achieve more accurate estimates.

Finally, reliability of the derived subscales for parental involvement was assessed by estimating their internal consistency using Cronbach's alpha for the whole sample, and for each ethnic-generational group. For participation in school related activities, the items had good internal consistencies with 0.80 for the overall sample (ranged from 0.73 to 0.83 across ethnic-generational groups). Home rules about TV, homework, and grades had somewhat low internal consistencies with 0.55 for the overall sample (ranged from 0.49 to 0.59 across ethnic-generational groups). For discussion about future academic plans, the items had excellent internal consistencies with 0.90 for the overall sample (ranged from 0.86 to 0.93 across ethnic-generational groups). Finally, extracurricular activities again had somewhat low internal consistencies with 0.57 for the overall sample (ranged from 0.42 to 0.58 across ethnic-generational groups). Although two of the factors did not meet Nunnaly's (1978) criterion of .70 as the cutoff for determining acceptable internal consistency reliability, all four factors were included in the following analyses as they represent different parental involvement behaviors and might reveal different effects on youth's GPAs.

Monitoring. Adolescents' perceptions of parental monitoring were assessed by 5 items from the monitoring/behavioral control scale by Steinberg, Lamborn, Dornbusch, & Darling (1992). The items on this scale asked adolescents how much their PCGs tried

to monitor their friends, locations, and activities (e.g., "How much does your parent *try to know* where you are most afternoons after school?" and "How much does your parent *try to know* who your friends are?"). The items were on a 3-point scale ranging from 1 = *doesn't try* to 3 = *tries a lot* (see Appendix I for the complete list of items). All 5 items were subjected to factor analyses using the same procedure as above to determine the best fitting factor structure.

The results of exploratory factor analyses (EFA) showed that there was only one sub-scale under this measure, which included all five items of parental monitoring. The results of CFAs indicated that there were some ethnic-generational differences on the item intercepts, but no variation in the factor loadings. That is, second-generation Chinese and Filipinos were 35.9% and 41.8% of a SD lower, respectively, than other groups on "How much does your parent *try to know* who your friends are?" after controlling for other ethnic-generational groups. Comparing the model fit indices between the CFAs before and after these intercepts were freed, CFI improved from 0.948 to 0.958, TLI improved from 0.931 to 0.942, and RMSEA improved from 0.038 to 0.035. The test of chi-square differences also indicated improvement between the models, $\Delta X^2(2)=36.716$, $p < .001$. Therefore, these intercepts were freed in the later LGM and LCGA models to achieve more accurate estimates. The parental monitoring items had good internal consistencies with 0.76 for the overall sample (ranged from 0.70 to 0.81 across ethnic-generational groups).

Parental Sacrifice. Parental sacrifice was measured through 6 items developed for a larger study on parenting of Asian immigrants. These items were designed to capture

two components, parents' sacrifice and their hard work for assuring that their children have a better life (e.g., "My parents has made many sacrifices to give me a better life"), and children's gratitude and recognition of parental sacrifice (e.g., "I am grateful to my parent for everything s/he has tried to do for me"). Responses to the items were measured on a 5-point scale ranging from: 1 = *strongly disagree* to 5 = *strongly agree* (see Appendix I for the complete list of items). Although this scale was designed to capture two components of parental sacrifice, Chao and Kaeochinda (2010) found a single factor structure among Chinese and Filipino youth with excellent internal consistencies for both ethnic groups (i.e., .84 for Chinese and .88 for Filipino). All 6 items were subjected to factor analyses using the same procedure as parental involvement and parental monitoring items.

The results of exploratory factor analyses (EFA) indicated that there was only one sub-scale under this measure, which included all six items of parental sacrifice. The results of CFAs showed that there was no ethnic-generational variation in the item intercepts or on the factor loadings. The model fit indices were 0.975 for CFI, 0.968 for TLI, and 0.050 for RMSEA. The parental sacrifice items had excellent internal consistencies with 0.89 for the overall sample (ranged from 0.85 to 0.91 across ethnic-generational groups).

For Latent Growth Modeling, these factor structures were specified in the model so that more accurate estimates could be calculated. However, scale scores for 1) participation in school related activities, 2) home rules about TV, homework, and grade, 3) discussion about future academic plans, 4) extracurricular activities, 5) parental

monitoring, and 6) parental sacrifice were created for analyses that do not allow specifying factor structures (i.e., multinomial logistic regression). See Table 3a and 3b for means (standard deviations) of the scale scores and number of missing cases across ethnic-generational groups.

Measures – Academic Performance

Grade Point Average (GPA). Adolescents' report cards for both fall and spring of the 9^{th} through 12^{th} grades were obtained directly from school records. Average GPAs were calculated for each semester (i.e., fall and spring semesters of 9^{th}, 10^{th}, 11^{th}, and 12^{th}).

Of the 3454 total participants, school grades were obtained for 2796 (80.9%) youth in the ninth grade, 2238 (64.8%) youth in the tenth grade, 2332 (67.5%) youth in the eleventh grade, and 2208 (63.9%) youth in the twelfth grade. Of the 3454 youth, school grades were obtained for all four academic years for 1394 (40.4%) youth, three academic years for 628 (18.2%) youth, two academic years for 682 (19.7%) youth, and only one academic year for 750 (21.7%) youth.

Some differences were found on the demographic factors and financial and human capital across youth who's GPAs are available for all 4 years, 3 years, 2 years, and 1 year (see Table 4a and 4b).

DATA ANALYSES AND RESULTS

Latent growth curve analysis within the framework of structural equation modeling was used to 1) test ethnic-generational variation in the latent growth curves of academic achievement from ninth to twelfth grades (i.e., GPAs from eight semesters) and

2) examine if financial, human, and social capital explains the ethnic-generational differences. The latent growth models (LGM) without predictors *(unconditional model*) and with predictors (*conditional model*) are first explained to establish the conceptual understanding of the analysis.

Conceptual Models of Latent Growth Modeling

Unconditional Latent Growth Model

In LGM, a growth model is formed to describe individual growth, represented by a series of repeated measurements *Yit* (minimum of three repeated measurements, *Yi1, Yi2, Yi3*, with *i* representing an individual and *t* representing the order for measuring *Y*). This is often called Level 1 or within-person model:

$$Yit = \alpha i + \beta i \lambda i + \varepsilon i,$$

where αi represents the intercept of an individual's growth trajectory (i.e., the initial level measured at time 1), βi represents the slope of an individual's growth trajectory (i.e., the unit change in *Yi* between two consecutive measurements), λi represents consecutive time points at which the measurement is taken, and εi represents the modeling residual for an individual.

Because the intercept (αi) and the slope (βi) are random variables, these individual model parameters can be represented by the group mean intercept ($\mu\alpha$) and group mean slope ($\mu\beta$), plus individual variation ($\zeta\alpha i$, $\zeta\beta i$). This is often called Level 2 or between-person model:

$$\alpha i = \mu\alpha + \zeta\alpha i, \text{ and } \beta i = \mu\beta + \zeta\beta i.$$

In other words, the Level 2 model assumes that individual growth trajectory parameters (i.e., αi and βi) are the function of the group mean growth parameters (i.e., $\mu\alpha$ and $\mu\beta$) plus individual variation (i.e., $\zeta\alpha i$ and $\zeta\beta i$). It also assumes that no other predictors are involved in the model to account for the variation of the individual growth trajectory parameters. Thus, the Level 2 model presented above is often called the *unconditional model* (e.g., Curran, 2000) because the individual growth trajectory parameters are not function of any predicting variables. The within-person and between-person components presented above can be represented as a structural equation model in the Figure 1a.

In this model, the coefficients from the intercepts to the repeated measures is a constant and λi (ordered time at which measurement is taken) takes the value of 0 (initial measurement), 1 (second measurement), 2 (third measurement), and 3 (fourth measurement), representing a linear growth of *Yi* over time. The values of λi, however, can be specific to reflect the actual time lapse between each consecutive measurement. Also, the growth trajectory over a time span does not have to be linear, and different analytic strategies can be adopted for assessing nonlinear growth for the given time period (e.g., Duncan, Duncan, Strycker, Li, & Alpert, 1999).

Conditional Latent Growth Model

In order to test for predictors that may explain the variation of the individual growth trajectory patterns, a conditional Level 2 (i.e., between-persons) model can be constructed (Curran, 2000):

$$\alpha i = \mu\alpha + \gamma 1 X 1\mathrm{i} + \gamma 2 X 2\mathrm{i} + \zeta\alpha i, \text{ and } \beta i = \mu\beta + \gamma 3 X 1\mathrm{i} + \gamma 4 X 2\mathrm{i} + \zeta\beta i,$$

where $X1$ and $X2$ are the predictors that may affect the individual growth trajectory parameters (i.e., intercept and slope) and $\gamma 1$ to $\gamma 4$ represent the effects of $X1$ and $X2$ on the variation of individual growth trajectory intercept (αi) and slope (βi). The conditional latent growth model involving predictors for the variation of individual growth trajectory parameters may be represented as a structural equation model in the Figure 1b.

In this model, variable $X1$ and $X2$ are predictors that may explain the variation in the individual growth trajectory parameters (i.e., intercept and slope) between groups. The path coefficients from these predictors to the intercept and slope represent their effects on the growth trajectories. For example, higher levels of $X1$ may be related to higher initial levels or greater increase over time of the growth trajectory.

Academic Trajectories across Ethnic-Generational Groups

Muthén and Muthén's (2007) Mplus statistical modeling program was used for the Latent Growth Modeling (LGM) and later Latent Class Growth Analysis (LCGA) models. For missing values, Mplus uses full information maximum likelihood estimation (FIML) under MCAR (missing completely at random) and MAR (missing at random; Little & Rubin, 2002). MAR means that missingness can be a function of observed covariates and observed outcomes. With missing data, the standard errors for the parameter estimates are computed using the observed rather than the expected information matrix (Kenward & Molenberghs, 1998).

Base Model

The growth trajectories (i.e., initial level and growth) of GPAs from ninth to twelfth grades were first modeled for the overall sample with dichotomous ethnic-

generational variables and demographic characteristics (i.e., school, cohort, and gender of adolescent and primary caregiver) as predictors. In other words, this model (*base model*) examined the differences in the growth trajectories of GPAs between immigrant groups and third-plus-generation Whites above and beyond demographic characteristics by omitting third-plus-generation Whites as the reference group. Therefore, the effects of each immigrant group indicated how much their initial level and growth differed from those of third-plus-generation Whites. This model was already a conditional latent growth model because it tested different effects of ethnic-generational groups and demographic characteristics on the initial level and growth of GPAs.

In order to establish the most parsimonious model, demographic factors that were not significantly associated with either the initial level or growth of academic trajectories were dropped from the model. Model fit indices such as changes in chi-square values, CFI, TLI, and RMSEA were examined to make sure that overall fit of the model did not decrease when these demographic factors were dropped. The results of the most parsimonious model were reported below.

The results indicated that third-plus-generation White youth had an average initial GPA of 2.906 and growth of -0.010 per semester, $\chi^2(160)=1693.95$, CFI=.913, TLI=.902, RMSEA=.053 (see Model 1 of Table 5a-5c, and Figure 2a). These numbers represent the initial letter grade of slightly below B or C+ and very small decline over time. Both generations of Chinese and Korean youth had higher initial GPAs, whereas both generations of Mexican youth and second-generation White youth had lower initial GPAs, than third-plus-generation White youth. More specifically, both generations of

Chinese youth indicated initial GPAs that were about a half letter grade higher than the reference group, but the advantages were smaller for Korean youth. On the other hand, both generations of Mexican youth had initial GPAs that were more than a half letter-grade lower than the reference group. The disadvantage was smaller, but also significant for second-generation White youth. In addition, both generations of Filipino youth and first-generation White youth had similar initial GPAs as the reference group.

In terms of growth of GPAs, the ethnic-generational differences generally showed opposite patterns from the initial levels with some exceptions. That is, both generations of Chinese and Korean youth had greater declines in their GPAs over time than the reference group, which had small, but significant declines over time. Although the initial levels were similar, first-generation Filipino youth also indicated greater declines over time than the reference group. On the other hand, among the groups that had lower initial GPAs, only second-generation Mexican youth had greater increases over time compared to the reference group. Second-generation Filipino, first-generation Mexican, and both generations of White youth had similar growth rates as third-plus-generation White youth.

Although not the focus of this dissertation study, associations of demographic characteristics with initial levels and growth of GPAs indicated that males had lower, and youth who indicated their mother as primary caregiver had higher, initial GPAs than their comparison groups (i.e., females and those who indicated others as the primary caregiver, respectively).

Financial and Human Capital Model

Once the most parsimonious base model was established (i.e., by dropping those demographic variables that were not significantly related to academic trajectories and that did not reduce the model fit), it was used as the starting point for additional models testing for financial and human capital factors, and later for social capital factors. In this model, financial and human capital factors (i.e., home ownership, parents' employment status and educational levels, two-parent household status, adolescents' and parents' years in the U.S., and adolescents' and parents' English fluency) were added to the base model, to see if any of the group differences found in the *base model* were explained by these factors. In order to improve the interpretability of the effects, continuous variables (i.e., parents' educational levels, adolescents' and parents years in the U.S., and adolescents' and parents' English fluency) were centered by the mean of the overall sample before examining in this model. Thus, the interpretation of the effects would be "the amount of change in y (e.g., initial level of GPA) per unit increase in x (e.g., parents' educational levels) above the mean." The dichotomous variables (i.e., home ownership, parents' employment status, and two-parent household status), however, were not centered to keep the interpretability of the effects. Thus, for example, the effect of home ownership on initial levels of GPA would represent the difference in the 9^{th} grade fall GPAs between youth whose parents owned their houses and those whose parents did not own their houses. Because financial and human capital factors were expected to have positive effects on academic trajectories, and because these dichotomous variables were adjusted at 0 (or the disadvantaged groups) in this model, it was also expected to reduce the estimated achievement levels compared to the *base model*. In addition, similar to the

base model, financial and human capital factors that had non-significant associations with the initial levels or growth of GPAs were dropped from the model using the same procedure described above. Changes in the ethnic-generational variations in the initial levels and growth of GPAs, as well as significant predictors of these latent factors in the most parsimonious model were summarized below (see Model 2 of Table 5a-5c and Figure 2b).

For initial levels, the addition of financial and human capital decreased the initial GPAs of third-plus-generation White youth, increased the advantages among all the Asian subgroups, and decreased the disadvantages among Mexicans and first-and second-generation Whites, $\chi^2(226)=1769.29$, CFI=.913, TLI=.903, RMSEA=.044. The advantages of both generations of Chinese and Korean youth were actually increased by between 11.9% and 66.2% from the *base model*. The increases in ethnic-generational variations were especially great for Filipino youth (i.e., their differences increased by 253.8% and 114.5% for first- and second-generations, respectively). After adjusting for financial and human capital, both generations of Filipino youth had higher initial GPAs compared to the reference group. On the other hand, both generations of Mexican and White youth decreased their disadvantages in initial GPAs by more than 30%. Although the disadvantage of second-generation White youth was no longer significant, both generations of Mexican youth were still about a half letter grade lower in initial GPAs than the reference group.

For growth of GPAs, the more negative growth among both generations of Chinese and Koreans was increased by about 10%. On the other hand, the more positive

growth among second-generation Mexican youth was reduced by 30%, but the difference remained significant. Thus, adjusting for financial and human capital factors generally increased the initial levels and decreased the growth of GPAs among immigrant groups relative to third-plus-generation White youth. However, the more negative growth of first-generation Filipino youth stayed about the same. In addition, the changes in the ethnic-generational variations from the base model to this adjusted model were notably greater for the initial levels of some groups. For example, for both generations of Filipino and second-generation White immigrant youth, as stated above, the initial levels increased from similar to higher and lower to similar, respectively, relative to the reference group. However, the variations in the growth of GPAs between these groups and the reference group stayed unchanged. In other words, adjusting for financial and human capital factors only increased their initial levels compared to third-plus-generation White youth without impacting the variations in the growth of GPAs.

Among financial and human capital factors, parental education, two-parent household status, parents' years in the U.S., and adolescents' English fluency were positively associated with initial GPAs. That is, youth whose parents had higher education, who lived in a two-parent household, whose parents have resided in the United States for more years, and who were more fluent in English had higher GPAs in the fall semester of 9th grade. For growth of GPAs, however, only parents' English fluency had a significant effect, and this effect was negative or was related to greater declines in GPA.

Social Capital Model

Finally, the next set of models tested if the social capital variables (i.e., participation in school related activities, home rules about TV, homework, and grade, helps with homework, discussion about future academic plans, providing extracurricular activities, purchasing extra materials, parental monitoring, and parental sacrifice) explained the remaining group differences (i.e., if group differences were no longer significant) over and above demographic factors, and financial and human capital. As previously stated, items for the four parental involvement factors (i.e., participation in school related activities, home rules, discussion about future academic plans, and providing extracurricular activities), parental monitoring, and parental sacrifice were included in this model as factor structures, rather than composite or mean scores, to improve the accuracy of the estimated effects. Because these items were entered as a part of factor structures, social capital variables were not centered even though they were considered continuous variables like some variables in the financial and human capital factors. Thus, the interpretations of these social capital variables would be "the amount of change in y (e.g., initial levels of GPA) per unit increase in x (e.g., participation in school related activities) above 0." At the same time, because social capital factors were expected to have positive effects on academic trajectories, and because these variables were adjusted at 0 (or below the mean levels) in this model, this model was also expected to reduce the estimated achievement levels compared to the *financial and human capital model*. Again, social capital factors that had non-significant associations with the initial levels or growth of GPAs were dropped from the model to determine the most parsimonious model. Changes in ethnic-generational variations in the initial levels and

growth of GPAs, as well as significant predictors of these latent factors in the most parsimonious model were summarized below (see Model 3 of Table 5a-5c and Figure 2c).

The patterns of ethnic-generational differences remained the same as in the *financial and human capital model*, $\chi^2(1446)=6564.67$, CFI=.893, TLI=.874, RMSEA=.032. In fact, the addition of social capital factors did not have much impact on the trajectory of third-plus-generation Whites, but slightly increased the ethnic-generational variations in initial GPAs between some immigrant groups and third-plus-generation White youth. For example, compared to third-plus generation Whites, the advantages of both generations of Chinese, Korean, and Filipino youth increased by 3.7% to 37.4%, whereas the disadvantages of first-generation Mexican youth and second-generation White youth increased by 4.7% and 27.4%, respectively. The only groups in which ethnic-generational differences decreased were second-generation Mexican (.6%) and first-generation White (45.5%). No notable change was found for growth of GPAs.

Some social capital factors impacted GPAs. That is, parents' participation in school-related activities, discussion about future academic plans, and parental monitoring were associated with higher initial GPAs. Providing extracurricular activities, on the other hand, was associated with lower initial GPAs. For growth of GPAs, the only significant predictor was discussion about future academic plans, and was related to decreases in GPAs over time.

In summary, Chinese and Korean immigrant youth had higher, but Mexican immigrant and second-generation White youth had lower initial GPAs than third-plus-

generation White youth when only demographic factors were adjusted. The ethnic-generational variations were generally in the opposite directions for the growth of GPAs. The addition of financial and human capital factors was resulted in the greater advantages among Asian immigrant groups and the smaller disadvantages among Mexican and White immigrant youth on the initial levels of GPAs, compared to the reference group. The addition of these factors, on the other hand, was resulted in the changes in opposite directions for the growth of GPAs. That is, Asian immigrant groups indicated slightly more negative growth and Mexican and White immigrant youth indicated slightly less positive growth, compared to the reference group. Moreover, the addition of social capital factors did not explain the ethnic-generational differences found in the *financial and human capital* model. In fact, it resulted in slight increases of ethnic-generational differences on the initial levels for most groups. The addition of social capital also resulted in the very slight changes, if there were any, in the growth of GPAs.

Academic Trajectories across Generation of Immigrants

To determine generational differences within each ethnic group, the same LGM models were conducted separately for each ethnic group. However, unlike the previous models, a dichotomous generation variable (i.e., second-generation) replaced the dichotomous ethnic-generation variables to test differences between first- and second-generation youth. Also, the same three models (i.e., *base, financial and human capital,* and *social capital models*) were conducted to see if these factors explained the generational differences. The results of generational variations in the initial level and

growth of GPAs as well as the effects of predictors (except for cohort and school) on these latent factors are summarized below.

Chinese

In the *base model*, second-generation youth (3.484) had lower initial GPAs than first-generation youth (3.577) (*B*=-.093, *p*=.026), but both groups had similar growth rates (-.035 and -.028 for first- and second-generations, respectively) (*B*=.007, *p*=.262), $\chi^2(104)=712.700$,CFI=.853, TLI=.847, RMSEA=.088 (see Figure 3A). Among the demographic characteristics, being male was related to lower initial GPAs (*B*=-.231, *p*<.001) and having mothers as primary caregiver was related to more positive growth (*B*=.020, *p*=.015).

Adding financial and human capital increased the advantage of first-generation youth on initial GPAs, but did not change the generational variation in growth, $\chi^2(172)=789.874$,CFI=.852, TLI=.846, RMSEA=.069. More specifically, second generation youth (3.511) had lower initial GPAs than first-generation youth (3.642) (*B*=-.131, *p*=.002), but both groups still had similar growth rates (-.034 and -.027 for first- and second-generations, respectively) (*B*=.007, *p*=.270). Among the predictors, males had lower initial GPAs than females (*B*=-.207, *p*<.001). On the other hand, parents' education (*B*=.031, *p*<.001) and adolescents' English fluency (*B*=.053, *p*<.001) were related to higher initial GPAs. For growth of GPAs, youth who identified their mothers as primary caregiver had more positive growth (*B*=.019, *p*=.024).

The generational variation in initial GPAs remained relatively unchanged after adjusting for social capital factors, $\chi^2(1205)=2471.155$, CFI=.877, TLI=.858,

RMSEA=.037. That is, second generation youth (3.509) had lower initial GPAs than first-generation youth (3.630) (*B*=-.121, *p*=.004). Both groups again had similar growth rates (-.034 and -.026 for first- and second-generations, respectively) (*B*=.008, *p*=.251). In fact, estimated academic trajectories mostly overlapped between the *financial and human capital* model and the *social capital* model. Among the demographic characteristics and financial and human capital on initial GPAs, males had lower (*B*=-.163, *p*<.001), and parents' education was related to higher (*B*=.027, *p*=.002), initial GPAs. Among the social capital variables, home rules was related to lower initial GPAs (*B*=-.396, *p*=.003), but parental monitoring was associated with higher initial GPAs (*B*=.343, *p*<.001). For growth of GPAs, youth who identified their mothers as primary caregiver had more positive growth (*B*=.018, *p*=.033).

Korean

Korean youth also indicated generational differences in the *base model*, $\chi^2(108)=757.335$,CFI=.812, TLI=.812, RMSEA=.092 (see Figure 3b). That is, second-generation youth (3.055) had lower initial GPAs than first-generation youth (3.312) (*B*=-.257, *p*<.001). Second-generation youth (-.056), however, had less negative growth than their first-generation counterparts (-.075) (*B*=.019, *p*=.079). Among the demographic characteristics, males had lower (*B*=-.289, *p*<.001), and youth who identified their mothers as primary caregiver had higher (*B*=.191, *p*=.006), initial GPAs.

Adjusting for financial and human capital did not change the advantage of first-generation youth on initial GPAs and the advantage of second-generation youth on growth among Korean youth, $\chi^2(178)=833.376$,CFI=.811, TLI=.809, RMSEA=.072. That

is, second generation youth (3.154) still had lower initial GPAs than first-generation youth (3.398) (*B*=-.244, *p*<.001). Also, the second generation youth (-.061) had somewhat less negative growth than their first-generation counterparts (-.079) (*B*=.018, *p*=.091). Among the predictors on initial GPAs, males (*B*=-.289, *p*<.001) and youth whose mothers were employed (*B*=-.115, *p*=.048) had lower initial GPAs, whereas youth who identified their mothers as primary caregiver had higher initial GPAs (*B*=.174, *p*=.014). No predictors were related to growth of GPAs.

The generational variation in initial GPAs remained significant after adjusting for social capital factors, $\chi^2(1213)=2680.534$, CFI=.844, TLI=.822, RMSEA=.041. That is, second generation youth (3.154) still had lower initial GPAs than first-generation youth (3.379) (*B*=-.231, *p*<.001). However, both generations of Korean youth had similar growth (-.076 and -.060 for first- and second-generations, respectively) (*B*=.016, *p*=.125). Among the demographic characteristics and financial and human capital, males (*B*=-.224, *p*<.001) and youth whose mothers were employed (*B*=-.097, *p*=.092) had lower initial GPAs. Youth who identified their mothers as primary caregiver, on the other hand, had somewhat higher initial GPAs (*B*=.122, *p*=.084). Among the social capital predictors, parental monitoring was associated with higher initial GPAs (*B*=.554, *p*<.001) and more negative growth (*B*=-.054, *p*=.021).

Filipino

The results of the *base model* indicated no generational difference on initial GPAs, $\chi^2(110)=481.199$,CFI=.802, TLI=.806, RMSEA=.090 (see Figure 3c). That is, first- (3.059) and second-generation youth (3.078) had similar initial GPAs (*B*=-.019,

p=.797). On the other hand, second-generation youth (-.017) indicated less negative growth rates than their first-generation counterparts (-.044) (*B*=.027, *p*=.029). Among the demographic characteristics, males had lower initial GPAs (*B*=-.163, *p*=.023). No predictor was related to growth of GPAs.

In the *financial and human capital model*, the patterns of the generational variation remained the same for the initial GPAs and growth, $\chi^2(174)=545.755$,CFI=.804, TLI=.797, RMSEA=.071. More specifically, first- (3.125) and second-generation youth (3.032) had similar initial GPAs (*B*=-.093, *p*=.456). Second-generation youth (-.025), on the other hand, still had less negative growth rates than their first-generation counterparts (-.087) (*B*=.052, *p*=.014). Among the predictors, males (*B*=-.145, *p*=.040) and youth whose parents had lived longer in the U.S. (*B*=-.013, *p*=.010) had lower initial GPAs, whereas parents' education (*B*=.043, *p*=.001) and youth's years in the U.S. (*B*=.024, *p*=.062) were associated with higher initial GPAs. For growth of GPAs, youth whose mothers were employed (*B*=.035, *p*=.057)and youth whose parents had lived longer in the U.S. (*B*=.001, *p*=.083) had somewhat more positive growth, but parents' education (*B*=-.004, *p*=.068) and youth's years in the U.S. (*B*=-.005, *p*=.016) were associated with more negative growth.

Once the social capital predictors were added to the model, the generational variation in growth of GPAs was only marginal, $\chi^2(1201)=2155.183$, CFI=.842, TLI=.818, RMSEA=.043. That is, both generations of Filipino youth had similar initial GPAs (3.296 and 3.280 for first- and second-generations, respectively) (*B*=-.016, *p*=.904). Second-generation youth (-.117), however, still had somewhat less negative

growth rates than their first-generation counterparts (-.153) (*B*=.036, *p*=.092). Among the demographic characteristics and financial and human capital, males (*B*=-.153, *p*=.031) and youth whose parents had lived longer in the U.S. (*B*=-.012, *p*=.016) had lower initial GPAs. Parents' education, on the other hand, was related to higher initial GPAs (*B*=.029, *p*=.030). Among the social capital predictors, home rules (*B*=-1.002, *p*=.006) and purchasing extra materials for school (*B*=-.100, *p*=.033) were related to lower initial GPAs. On the other hand, discussions about future academic plans (*B*=.207, *p*=.028), parental participation in school related activities (*B*=.255, *p*=.004), and parental sacrifice (*B*=.196, *p*=.004) were related to higher initial GPAs. For growth of GPAs, youth whose mothers were employed had somewhat more positive growth (*B*=.034, *p*=.067), whereas parental education (*B*=-.004, *p*=.095) and youth's years in the U.S. (*B*=-.004, *p*=.065) were associated with somewhat more negative growth. Among the social capital, home rules (*B*=.156, *p*=.008) and purchasing extra materials for school (*B*=.030, *p*<.001) were associated with more positive growth. On the other hand, discussions about future academic plans (*B*=-.026, *p*=.078) and parental sacrifice (*B*=-.037, *p*=.001) were related to more negative growth (*B*=-.040, *p*=.002).

Mexican

In the *base model*, there were no generational differences in initial level or growth of GPAs among Mexican youth, $\chi^2(108)=223.196$,CFI=.925, TLI=.925, RMSEA=.042. That is, both generations of Mexican youth had similar initial GPAs (2.021 and 2.013 for first- and second-generations, respectively) (*B*=-.008, *p*=.926) and similar growth rates

(.019 and .040 for first- and second-generations, respectively) (*B*=.021, *p*=.236). No predictor had significant association with initial levels and growth of GPAs.

Addition of financial and human capital did not have a significant impact on the generational variations, $\chi^2(172)=280.591$,CFI=.931, TLI=.928, RMSEA=.032. Both generations of Mexican youth still indicated similar initial GPAs (2.047 and 1.987 for first- and second-generations, respectively) (*B*=-.060, *p*=.482) and similar growth rates (.029 and .048 for first- and second-generations, respectively) (*B*=.019, *p*=.303). Among the predictors, youth whose parents owned their houses (*B*=.260, *p*=.001), youth who lived in a two-parent household (*B*=.179, *p*=.047), and youth whose parents were more fluent in English (*B*=.044, *p*<.001) had higher initial GPAs. For growth of GPAs, parents' education was associated with more positive growth (*B*=.009, *p*=.007) and parents' English fluency was related to more negative growth (*B*=-.005, *p*=.015).

The generational variations remained non-significant in the *social capital model*, $\chi^2(1201)=2004.436$, CFI=.871, TLI=.851, RMSEA=.033. That is, both generations of Mexican youth indicated similar initial GPAs (1.800 and 1.696 for first- and second-generations, respectively) (*B*=-.104, *p*=.297) and similar growth rates (.110 and .133 for first- and second-generations, respectively) (*B*=.023, *p*=.252). Among the demographic characteristics and financial and human capital, youth whose parents owned their houses (*B*=.247, *p*=.007) and youth whose parents were more fluent in English (*B*=.037, *p*=.001) had higher initial GPAs. Among the social capital, providing extracurricular activities was associated with lower initial GPAs (*B*=-1.067, *p*=.032), whereas parents' participation in school related activities (*B*=.182, *p*=.069) and home rules (*B*=.851,

p=.040) were associated with higher initial GPAs. For growth of GPAs, parents' education was associated with more positive growth (*B*=.008, *p*=.015). On the other hand, parents' English fluency was related to more negative growth (*B*=.007, *p*=.001). Finally, among the social capital, participation in school related activities was related to more positive growth (*B*=.042, *p*=.035) and helps with homework when asked was associated with more negative growth (*B*=-.030, *p*=.009).

White

Similar to Mexican youth, there were no generational differences in initial level or growth of GPAs among White youth, $\chi^2(106)=182.560$,CFI=.907, TLI=.905, RMSEA=.058. That is, both generations of White youth had similar initial GPAs (3.006 and 2.986 for first- and second-generations, respectively) (*B*=-.020, *p*=.867) and similar growth rates (.039 and .015 for first- and second-generations, respectively) (*B*=-.024, *p*=.228). Among the demographic characteristics, males had lower initial GPAs (*B*=-.282, *p*=.014). No predictor had significant association with growth of GPAs.

The generational differences in initial level and growth of GPAs remained non-significant after financial and human capital factors were added to the model, $\chi^2(172)=291.574$,CFI=.863, TLI=.856, RMSEA=.057. Both generations of White youth indicated similar initial GPAs (3.301 and 3.352 for first- and second-generations, respectively) (*B*=.051, *p*=.665) and similar growth rates (.008 and -.021 for first- and second-generations, respectively) (*B*=-.029, *p*=.158). Among the predictors, males (*B*=-.320, *p*=.005) and youth whose fathers were employed (*B*=-.418, *p*=.032) had lower initial GPAs. On the other hand, youth who lived in a two-parent household had

somewhat higher initial GPAs (*B*=.254, *p*=.060). No predictor had significant association with growth of GPAs.

The generational variations still remained non-significant in the *social capital model*, χ^2(1173)=2470.471, CFI=.656, TLI=.593, RMSEA=.072. That is, both generations of White youth indicated similar initial GPAs (3.600 and 3.459 for first- and second-generations, respectively) (*B*=-.141, *p*=.573) and similar growth rates (-.092 and -.104 for first- and second-generations, respectively) (*B*=-.012, *p*=.839). In this model, none of the demographic characteristics and financial and human capital was significantly related to initial level and growth of GPAs. Among the social capital predictors, parental monitoring was associated with somewhat higher initial GPAs (*B*=.612, *p*=.075), but no association was found for the growth of GPAs.

In summary, generational differences were only found among Asian immigrant groups. More specifically, when demographic characteristics were controlled, first-generation Chinese and Korean youth indicated higher initial GPAs than their second-generation counterparts. On the other hand, second-generation Korean and Filipino youth indicated less negative growth than their first-generation counterparts. These generational differences remained the same after adjusting for the financial and human capital factors. Although the generational differences on the initial GPAs remained in the *social capital model*, the generational difference on the growth among Korean and Filipino youth became no longer significant. These results indicated that social capital factors explained the generational variation in the growth of GPAs more so than the generational variation in the initial levels.

Exploring Academic Trajectories within Ethnic-Generational Groups

Before estimating multiple trajectory patterns within each ethnic-generational group, the possibility of multiple trajectory patterns was first determined for each group. This was done by running the above LGM for each ethnic-generational group (i.e., first- and second-generations of Chinese, Korean, Filipino, Mexican, and White youth as well as third-plus-generation White youth) and examining within-group variances of the individual growth trajectory parameters (i.e., intercept and slope). LGM provides significance tests for the variances of intercept and slope. If these tests come out significant, they indicate large variations for the intercept and slope within groups, and thus suggest a possibility of multiple trajectory patterns. The results indicated that all ethnic-generational groups had significant variances on the intercepts and slopes. Therefore, to extend the understanding of academic trajectories among these immigrant youth in high school, within-group variations were further explored for all ethnic-generational groups. For Mexican and White immigrant youth, however, first- and second-generations were combined in the examination of within-group variations because these groups did not have generational difference on the individual growth trajectory parameters in the previous analyses.

Latent Class Growth Analyses

Different patterns of academic trajectories within ethnic/ethnic-generational groups were explored using LCGA (Muthén & Muthén, 2000). The goal of LCGA is to find different trajectory classes corresponding to individuals' developmental pathways. Three criteria for deciding the number of latent trajectory classes were suggested: 1) the

Bayesian information criterion (BIC) statistics, 2) the classification quality based on the average posterior probabilities, and 3) the usefulness of the latent classes in practice (Muthén & Muthén, 2000). BIC balances between maximizing the representation of trajectory patterns and keeping the model parsimonious. A lower value of BIC indicates a better model fit. The posterior probabilities indicate the likelihood of individuals belonging to a certain class over the other. The classification quality is considered to be better if the average posterior probability is considerably higher for the class with the highest probabilities than for other classes. In other words, the classification quality is considered high if individuals are only likely to belong in one class, and not in multiple classes. The usefulness of the latent class can be determined by the distinctiveness of the trajectories patterns from each other, the size of each class, the number of estimated parameters (parsimonious model), and the predictability of consequences.

The results of LCGA indicated three to four classes of academic trajectories in each ethnic/ethnic-generational group (see Table 6). No crossing of academic trajectories was found in any group during high school. That is, a class with the highest initial GPAs also had the highest GPAs at the end of high school, or in the spring semester of twelfth grade. Similarly, classes with the lowest and middle initial GPAs received the lowest and middle GPAs, respectively, at the end of high school. Comparing across groups, the most noticeable difference was that all Asian groups and third-plus-generation Whites had the largest class size in the high achieving class (i.e., class 1), but Mexican and White immigrant groups had the largest class size in the middle achieving class (i.e., class 2). Comparing with the third-plus-generation Whites, Chinese and Koreans had classes with

higher initial GPAs, but with greater decline in GPAs over time. The declines were especially greater among first-generation Koreans and the low achieving class (i.e., class 3) of first-generation Chinese. Moreover, one-in-three Mexican youth were categorized in the low achieving class, which indicated failing initial GPAs. However, this group also showed the greatest increase in GPAs over time.

Multinomial Logistic Regression

Once trajectory classes were determined for each ethnic/ethnic-generational groups, their associations to demographic characteristics, as well as financial, human, and social capital factors were examined using multinomial logistic regression. Because the effects of these factors were estimated as the likelihood of being in a certain class of trajectory patterns compared to being in the reference class, the high achieving class (i.e., class 1) in each ethnic/ethnic-generational group was used as the reference group. The analyses were conducted with SPSS version 17.0 (SPSS, 2007).

In order to interpret the associations between predictors and a certain trajectory class, following four criteria had to be met. First, the overall test of relationship among the independent variables and classes defined by the dependent variable is significant at $p<.05$. This test is based on the reduction in the likelihood values for a model which does not contain any independent variables and the model that contains the independent variables. Therefore, it tests whether group of independent variables are related to the dependent variable. Second, the minimum number of cases per predictor is 10. Similar to other regression models, results of multinomial logistic regression become unstable when there are too few cases per predictor. Third, the classification accuracy exceeds by-

chance accuracy by 25%. The proportion of by-chance accuracy is computed by squaring and summing the proportion of cases in each class. For example, when class 1 has 50 cases, class 2 has 100 cases, and class 3 has 50 cases, the by-chance accuracy is $(.25)^2 + (.50)^2 + (.25)^2 = .375$, or 37.5%. Thus, the classification accuracy should exceed 37.5 * 1.25, or 46.9%. When the classification accuracy exceeds this number, it can be said that the set of independent variables improved the accuracy of classification for the sample. Last, the likelihood ratio test that evaluates the overall relationship between an independent variable and the dependent variable is significant at $p<.05$. In other words, the likelihood ratio test examines whether a predictor is generally related to the dependent variable, or classes.

Similar to the earlier LGM models, the factors for these analyses were added in three steps: 1) demographic characteristics (i.e., school, cohort, gender of adolescent and primary caregiver), 2) financial and human capital (i.e., home ownership, parents' employment status, parents' educational levels, two-parent household, adolescents' and parents' years in the United States, and adolescents' and parents' English fluency), and 3) social capital (i.e., parental involvement in school, parental monitoring, and parental sacrifice). In order to deal with small sample sizes within ethnic/ethnic-generational groups, non-significant predictors were dropped from analyses in the next step to keep the number of independent variables small. The significant associations are summarized below and in Table 7a-c.

Third-plus-generation White. In the *demographic only model*, compared to males, females were less likely to be in the lower achieving classes than the high

achieving class (42.5% and 63.3% less likely to be in the middle achieving and low achieving classes, respectively). In the *financial and human capital model*, gender of adolescent, homeownership, and living in a two-parent household were associated with being in the lower achieving classes. Similar to the demographic only model, compared to males, females were less likely to be in the lower achieving classes than the high achieving class (52.5% and 75.7% less likely to be in the middle achieving and low achieving classes, respectively). On the other hand, compared to youth whose parents owned their houses, youth whose parents did ***not*** own their houses were more likely to be in the lower achieving classes than the high achieving class (76.8% and 361.7% more likely to be in the middle achieving and low achieving classes, respectively). Similarly, compared to youth who lived in a two-parent household, youth who lived in other family arrangements were more likely to be in the lower achieving classes than the high achieving class (107.4% and 408.7% more likely to be in the middle achieving and low achieving classes, respectively). In addition mothers' employment status was associated with being in the middle achieving class compared to the high achieving class. That is, compared to youth whose mothers were employed, youth whose mothers were ***not*** employed were 46.4% less likely to be in the middle achieving class than in the high achieving class. In the *social capital model*, compared to males, females were again less likely to be in the lower achieving classes than the high achieving class (48.1% and 76.0% less likely to be in the middle achieving and low achieving classes, respectively). However, homeownership and living in a two-parent household were only associated with being in the high achieving class relative to the low achieving class. That is,

compared to youth whose parents owned their houses, youth whose parents did ***not*** own their houses were 282.9% more likely to be in the low achieving class than in the high achieving class. Also, compared to youth who lived in a two-parent household, youth who lived in other family arrangements were 360.2% more likely to be in the low achieving class than in the high achieving class. In addition, mothers' employment status was again associated with being in the middle achieving class relative to the high achieving class. That is, compared to youth whose mothers were employed, youth whose mothers were ***not*** employed were 40.7% less likely to be in the middle achieving class than in the high achieving class. In summary, females were associated with being in the high achieving class relative to the lower achieving classes in all of the models. Homeownership and living in a two-parent household were also associated with being in the high achieving class. However, these associations were only significant between the high and low achieving classes after social capital factors were adjusted. Mothers' employment status, on the other hand, was associated with being in the middle achieving class relative to the high achieving class.

First-generation Chinese. In the *demographic only model*, gender of adolescent was again associated with the likelihood of class categorization. However, unlike third-plus-generation White youth, the association was only found between the membership in the high achieving class relative to the low achieving classes. That is, compared to males, females were 74.8% less likely to be in the low achieving class than in the high achieving class. When *financial and human capital* factors were added to the model, mothers' employment status, parents' education, and adolescents' English fluency determined the

likelihood of class categorization. More specifically, compared to youth whose mothers were employed, youth whose mothers were ***not*** employed were 71.0% less likely to be in the middle achieving class than in the high achieving class. On the other hand, every unit increase in parents' education above the mean (i.e., 6.27 or between 6 = *some vocational or college training* and 7 = *finished four-year college degree*) decreased the likelihood of being in the middle achieving class rather than in the high achieving class by 46.2%. Finally, every unit increase in adolescents' English fluency above the mean (i.e., 4.59 or between 4 = *very* well and 5 = *extremely well*) decreased the likelihood of being in the low achieving class rather than in the high achieving class by 74.6%. In this model, gender of adolescent was not associated with the likelihood of class categorization. Also, although the likelihood ratio test was significant, fathers' employment status did not determine the likelihood of specific class membership. However, in the *social capital model*, compared to youth whose fathers were employed, youth whose fathers were ***not*** employed were, although marginally significant, 88.1% less likely to be in the middle achieving class than in the high achieving class. Also, similar to the *financial and human capital model*, adolescents' English fluency determined the likelihood of class categorization. That is, every unit increase in adolescents' English fluency above the mean (i.e., 4.59 or between 4 = *very* well and 5 = *extremely well*) decreased the likelihood of being in the low achieving class rather than in the high achieving class by 59.6%. Finally, among social capital factors, every unit increase in parental monitoring above the mean (i.e., 2.43 or between 2 = *tries a little* and 3 = *tries a lot*) decreased the likelihood of being in the middle achieving class rather than in the high achieving class

by 86.1%. Once the associations were adjusted for social capital factors, mothers' employment status and parents' education were not associated with class categorization. In summary, females were only associated with being in the high achieving class relative to the low achieving class before adjusting for financial and human capital factors. The associations of mothers' employment status and parents' education also became non-significant once social capital factors were adjusted. In the *social capital model*, adolescents' English fluency and parental monitoring were associated with being in the high achieving class relative to low and middle achieving classes, respectively. Fathers' employment status, on the other hand, was associated with being in the middle achieving class relative to the high achieving class.

Second-generation Chinese. In the *demographic only model*, similar to third-plus-generation White youth, compared to males, females were less likely to be in the lower achieving classes than the high achieving class (51.3% and 73.5% less likely to be in the middle achieving and low achieving classes, respectively). Also, compared to youth who identified mothers as primary caregiver, youth who identified others as their primary caregiver were more likely to be in the lower achieving classes than the high achieving class (93.2% and 142.4% more likely to be in the middle achieving and low achieving classes, respectively). When *financial and human capital* factors were added to the model, gender of adolescent only determined the likelihood of class categorization between the high achieving and low achieving classes. That is, compared to males, females were 71.2% less likely to be in the low achieving class than in the high achieving class. Having mothers as primary caregiver was no longer associated with the trajectory

classes. In the *social capital model,* females and parental sacrifice were associated with being in the high achieving class relative to the lower achieving classes. More specifically, compared to males, females again were less likely to be in the lower achieving classes than the high achieving class (51.4% and 66.9% less likely to be in the middle achieving and low achieving classes, respectively). Similarly, every unit increase in parental sacrifice above the mean (i.e., 4.39 or between 4 = *Agree* and 5 = *Strongly Agree*) decreased the likelihood of being in the middle and the low achieving classes rather than in the high achieving class by 46.3% and 62.6%, respectively. On the other hand, having home rules was associated with being in the lower achieving classes relative to the high achieving class. That is, every unit increase in home rules above the mean (i.e., .72 or between 0 = *No* and 1 = *Yes*) increased the likelihood of being in the middle and low achieving classes rather than in the high achieving class by 114.4% (marginal) and 305.5%, respectively. In summary, females, similar to third-plus-generation White youth, were associated with being in the high achieving class relative to the lower achieving classes. On the other hand, having mothers as primary caregiver was only associated with being in the high achieving class before adjusting for financial and human capital factors. In the *social capital model*, parental sacrifice was associated with being in the high achieving class, whereas home rules was associated with being in the lower achieving classes.

First-generation Korean. In the *demographic only model*, no association was found. When *financial and human capital* factors were added to the model, the overall test of relationships was not significant. Finally, in the *social capital model,* parental

monitoring was associated with the being in the high achieving class relative to the low achieving class. That is, every unit increase in parental monitoring above the mean (i.e., 2.43 or between 2 = *Tries a little* and 3 = *Tries a lot*) decreased the likelihood of being in the low achieving class rather than in the high achieving class by 91.3% (b= -2.437, *SE* = .791, *p* = .002; odds ratio= .087; 95% CI: .019-.412).

Second-generation Korean. In the *demographic only model*, similar to third-plus-generation White youth, compared to males, females were again less likely to be in the lower achieving classes than the high achieving class (61.9% and 69.9% less likely to be in the middle achieving and low achieving classes, respectively). In the *financial and human capital model*, females still had similar associations (44.8% and 64.2% less likely to be in the middle achieving and low achieving classes, respectively). In addition, parents' education was associated with being in the middle achieving class relative to the high achieving class. More specifically, every unit increase in parental education above the mean (i.e., 6.27 or between 6 = *some vocational or college training* and 7 = *finished four-year college degree*) increased the likelihood of being in the middle achieving class rather than in the high achieving class by 33.9%. Finally, in the *social capital model*, compared to males, females were once again less likely to be in the lower achieving classes than the high achieving class (60.8% and 73.2% less likely to be in the middle achieving and low achieving classes, respectively). Parents' education and social capital factors, however, were not associated with the class categorization. In summary, females, similar to third-plus-generation White youth, were again associated with being in the high achieving class relative to the lower achieving classes. Although parents' education was

associated with the class categorization in the *financial and human capital model*, it predicted memberships in the middle achieving class relative to the high achieving class. This association, however, was no longer significant once social capital factors were adjusted.

First-generation Filipino. None of the overall tests of relationships were significant. This may be due to the small group size of this ethnic-generational group.

Second-generation Filipino. Only the *demographic only model* passed the criteria. In this model, similar to third-plus-generation White youth, compared to males, females were again less likely to be in the lower achieving classes than the high achieving class (43.4% and 65.4% less likely to be in the middle achieving and low achieving classes, respectively).

First- and second-generation Mexican. In the *demographic only model*, similar to third-plus-generation White youth, compared to males, females were less likely to be in the lower achieving classes than the high achieving class (35.8% and 42.3% less likely to be in the middle achieving and low achieving classes, respectively). When *financial and human capital* factors were added to the model, living in a two-parent household was associated with being in the lower achieving classes relative to the high achieving class. More specifically, compared to youth who lived in a two-parent household, youth who lived in other family arrangements were somewhat less likely to be in the lower achieving classes (72.9% and 85.6% less likely to be in the middle achieving and low achieving classes, respectively). In addition, homeownership and parents' education were also related to being in the high achieving class relative to the low achieving class. That is,

compared to youth whose parents owned their houses, youth whose parents did ***not*** own their houses was 847.2% more likely to be in the low achieving class than in the high achieving class. Also, every unit increase in parents' education above the mean (i.e., 6.27 or between 6 = *some vocational or college training* and 7 = *finished four-year college degree*) decreased the likelihood of being in the low achieving class rather than in the high achieving class by 57.0%. Gender of adolescent was no longer associated with the trajectory classification. Finally, in the *social capital model*, only homeownership determined the likelihood of class categorization. That is, compared to youth whose parents owned their houses, youth whose parents did ***not*** own their houses were more likely to be in the lower achieving classes than the high achieving class (109.9% and 255.1% more likely to be in the middle achieving and low achieving classes , respectively). In summary, similar to first-generation Chinese youth, females were only associated with being in the high achieving class relative to the lower achieving classes before adjusting for financial and human capital factors. Also, having two parents in a household was associated with being in the lower achieving classes than in the high achieving class. This association, however, was no longer significant once social capital factors were adjusted. In addition, homeownership and parents' education were associated with being in the high achieving class in the *financial and human capital model*, but only homeownership remained associated after adjusting for social capital factors.

First- and second-generation White. In the *demographic only model*, no associations were found. When *financial and human capital* factors were added to the

model, fathers' employment status determined the likelihood of class categorization. That is, compared to youth whose fathers were employed, youth whose fathers were ***not*** employed were 97.2% less likely to be in the third highest achieving class, or second lowest achieving class, than the highest achieving class. The *social capital model* did not meet the criteria for the overall test of relationship.

In summary, gender was the most consistent predictor of class categorization across ethnic/ethnic-generational groups. That is, males were more likely to be in the middle and low achieving classes than in the high achieving class, compared to their female counterparts (among third-plus-generation Whites and second-generation Chinese and Korean youth). The same pattern was found, but only in the *demographic only model* (i.e., before financial and human capital factors were adjusted), among first-generation Chinese, second-generation Filipino (because other models did not pass the criteria), and Mexican immigrant youth. However, gender was not a significant predictor among first-generation Korean and White immigrant youth. Among the financial and human capital factors, homeownership predicted class memberships in the high achieving class more so than the lower achieving classes among third-plus-generation White youth and Mexican immigrant youth. Homeownership, however, was not a predictor among both generations of Asian immigrant groups and White immigrant youth. In addition, adolescents' English fluency and having mothers as primary caregiver also predicted class memberships in the high achieving class, but only among first- and second-generation Chinese youth, respectively. On the other hand, some financial and human capital factors had a negative impact on class memberships. For example, fathers'

employment status predicted memberships in the middle achieving class compared to the high achieving class among first-generation Chinese youth and White immigrant youth. Mothers' employment status also predicted memberships in the middle achieving class among first-generation Chinese youth (though not significant in the *social capital model*) and third-plus-generation White youth. Furthermore, two-parent household status and parents' education predicted memberships in the high achieving class for some groups and memberships in the lower achieving classes for others. That is, two-parent household status predicted memberships in the high achieving class among third-plus-generation White youth, but memberships in the lower achieving classes among Mexican immigrant youth (though not significant in the *social capital model)*. Similarly, parents' education predicted memberships in the high achieving class among first-generation Chinese and Mexican immigrant youth, but memberships in the middle achieving class among second-generation Korean youth. However, parents' education was not a significant predictor for any of the groups after social capital factors were adjusted. Finally, the effects of social capital variables were only found among Chinese and Korean immigrant youth. More specifically, parental monitoring predicted memberships in the high achieving class relative to the middle achieving class among first-generation Chinese youth, and the low achieving class among first-generation Korean youth. Also, home rules and parental sacrifice uniquely predicted memberships in the low achieving class and the high achieving class, respectively, among second-generation Chinese youth.

DISCUSSION

The main purpose of this study was to increase understanding of academic trajectories among immigrant high school students and to investigate the impact of financial, human, and social capital factors on their academic outcomes. With the increasing proportion of children in our school system growing up in immigrant households (Hernández, Denton, & Macartney, 2007; Kao & Rutherford, 2007; Suarez-Orozco & Suarez-Orozco, 2001; U.S. Census Bureau, 2001; Zhou, 1997), understanding their academic performance throughout high school has become increasingly important. This importance is further attested by the fact that immigrant students and their families often considered education as their sole opportunity for upward mobility (Caplan et al., 1991; Gibson, 1991; Gibson & Bhachu, 1991; Suarez-Orozco, 1989) and indicated stronger educational aspirations than their non-Hispanic White counterparts (Fan, 2001; Fuligni, 1997; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). However, our knowledge has been limited to cross-sectional data only and to pan-ethnic comparisons of immigrant youth that mask important variations across all possible sub-ethnic groups comprising the four pan-ethnic groups. Moreover, generational comparisons have also been limited to pan-ethnic groups. Past studies, thus, were unable to gain the understanding of how academic achievements of immigrant students change over time during high school. The examination of achievement over time is especially important for immigrant students because they are in the process of acculturation and are expected to go through many changes in their lives as they adapt to new environments. Furthermore, when research examined the effects of social capital, such as parental involvement in

school, on immigrant students' academic achievement, it did not consider factors that were particularly relevant to immigrant students (Chao, 2000).

This study, therefore, examined the academic trajectories of immigrant students from 9th to 12th grade by focusing on their ethnic-generational differences and their within group variations. In addition, this study tested the effect of culturally-relevant social capital factors over and above financial and human capital factors in order to gain an understanding of how parent-child interaction impacts immigrant students' school outcomes. Three sets of analyses were conducted to determine 1) ethnic-generational variations of academic trajectories between third-plus-generation White youth and first- and second-generation of immigrants, 2) generational variations of academic trajectories between first- and second-generation youth within each ethnic group, and 3) multiple trajectory patterns within ethnic/ethnic-generational groups. In each set of analyses, associations between trajectory factors (i.e., initial level and growth of GPAs) or trajectory classes and social capital factors were examined over and above financial and human capital factors to determine the effects of these factors and if they explained the group or class variations, respectively.

Academic Trajectories across Ethnic-Generational Groups

The first set of hypotheses (i.e., hypothesis 1) regarding the initial level and growth of GPAs across ethnic-generational groups were mostly supported. That is, both generations of Chinese and Korean youth started high school with higher, whereas both generations of Mexican youth started high school with lower, GPAs than third-plus-generation White youth. Also, both generations of Filipino youth and first-generation

White youth started high school with similar GPAs as the reference group, as predicted. Contrary to the predictions, however, second-generation White youth started high school with lower GPAs than the reference group. This unexpected result was probably caused by the lower financial and human capital of second-generation White youth compared to their third-plus-generation counterparts. In fact, the group difference was no longer significant once these variables were controlled. The hypotheses were also generally supported for growth of GPAs. More specifically, both generations of Chinese and Korean youth experienced greater declines over time, and second-generation Mexican youth experienced greater increases over time, than the reference group. Second-generation Filipino youth and both generations of White youth also had similar changes over time as hypothesized. The findings for first-generation Filipino and first-generation Mexican youth, however, did not support the predictions. That is, first-generation Filipino youth had greater declines over time, whereas first-generation Mexican youth had similar changes over time, compared to the reference group. These variations in the growth remained unchanged when financial, human, and social capital variables were controlled. Therefore, it is unlikely that different levels of these factors caused the unexpected variations in the growth of GPAs. The results from generational comparisons within ethnic groups, however, suggested a possible explanation for the unexpected finding for Filipino immigrant youth. In these models, generational variation in the growth of GPAs between first- and second-generation Filipino youth was explained by the social capital variables. Therefore, Filipino immigrant youth might have different effects of social capital on the growth of GPAs that were not captured by controlling for

these effects in the overall sample. On the other hand, generational comparisons among Mexican immigrant youth indicated no generational variation in the growth of GPAs. In fact, the growth in these groups was very similar in the social capital model (i.e., .073 and .077 for first- and second-generations). Thus, further examination is warranted to determine why only second-generation Mexican youth had greater increases in GPAs over time compared to third-plus-generation White youth in the ethnic-generational comparisons.

Unlike the first set of hypotheses, the second set of hypotheses (i.e., hypothesis 2) was less supported. In hypothesis 2, it was predicted that ethnic-generational variations would be reduced once financial and human capital variables were added to the model. It was further predicted that the reductions would be greater for Mexican immigrant youth such that ethnic-generational variations would no longer be significant. However, after adjusting for financial and human capital, there were further increases in initial GPAs and greater declines in GPAs over time for Asian immigrant groups (i.e., first- and second-generations of Chinese, Korean, and Filipino) compared to third-plus-generation Whites. For example, both generations of Filipino youth had higher initial GPAs than the reference group once financial and human capital factors were controlled. These results suggested that Filipino immigrant youth began high school with higher GPAs than third-plus-generation White youth, after adjusting for financial and human capital. On the other hand, the disadvantages on initial GPAs and greater increases over time among Mexican immigrant youth were reduced as predicted, but remained significant. These results suggested that the lower initial GPAs and more positive growth of Mexican immigrant

youth were partially, but not entirely, consequences of their lower financial and human capital.

The results did not support the third set of hypotheses (i.e., hypothesis 3). Although no ethnic-generational variations were predicted once social capital variables were added to the model, ethnic-generational differences were somewhat more pronounced for the initial GPAs and remained basically unchanged for the growth. Because the effects of these variables were restricted to be the same across groups in the ethnic-generational comparisons (i.e., same coefficients were estimated for all groups), it is possible that allowing these effects to differ across groups would have increased the amount of ethnic-generational variations explained. In other words, the failure of social capital factors to explain ethnic-generational variations might be caused by ethnic variations in the effects of these factors on academic trajectories. In fact, generational comparisons within ethnic groups suggested that different social capital factors impacted academic trajectories across ethnic groups. In order to test whether the effects of social capital variables would differ across ethnic-generational groups, multiple group approach should be implemented to compare the model fit before and after constraining the effects of capital variables across groups. This study, however, was unable to allow the unconstrained estimates in the LGM analyses because of the huge increase in the model complexity, which prevented model estimations to reach final conclusions. Further examination, therefore, is warranted to test if allowing different effects of financial, human, and social capital variables increases the amount of ethnic-generational variations explained.

In summary, these LGM analyses were able to advance our knowledge about the academic trajectories in high school of first- and second-generation immigrant youth at ethnic-generational level. More specifically, both generations of Chinese, Korean, and Filipino youth generally started high school with higher GPAs in the fall semester of 9th grade, but showed greater declines over time than third-plus-generation White youth. Mexican immigrant youth, on the other hand, started with lower GPAs, but they experienced similar or greater increases over the course of high school than the reference group. In addition, similar to previous research, both generations of White immigrant youth had similar levels of GPAs at the beginning of high school and similar changes over time compared to their third-plus-generation counterparts. Thus, a general pattern was found that the groups with higher initial GPAs indicated more negative growth, and vice versa, than the reference group. This pattern was somewhat expected because there is not much room for improvement when GPAs start off very high. Further examination, however, is needed to determine if the more positive growth among Mexican immigrant youth is due to the dropouts of low achieving students, regression toward the mean, or other factors. The possibility that Mexican immigrant youth had more positive growth of GPAs due to the dropouts of low achieving students is high if they had higher rates of dropouts from high school than other groups. Although the data used in this study did not include information regarding the students' dropouts from high school, the examination of dropouts from this study (i.e., the last school grades submitted were of the fall semester of 12th grade or earlier) in fact indicated that Mexican immigrant youth had higher possible dropout rates than any other group. That is, while the possible dropout

rate was 38.2% for the overall sample, the rates were the highest at 63.8% and 62.0% for the first- and second-generation Mexican youth, respectively. Therefore, future research is needed to determine the reasons, especially the impacts of dropouts from high school, on the growth of GPAs. Furthermore, this study did not control for the curriculum tracks, or the types of courses (e.g., college-preparatory courses) students' took. As Crosnoe (2001) found, parents' involvement behaviors varied depending on whether their children were in college-preparatory, general, or remedial courses. It is, thus, possible that academic trajectories also differ across curriculum tracks because of the variations in parental involvement, or simply because of the differences in the difficulties of courses.

Academic Trajectories across Generation of Immigrants

For the generational comparisons within ethnic groups (hypothesis 4), it was predicted that first-generation Chinese, Korean, and Mexican youth would start with higher GPAs than their second-generation counterparts, whereas no differences were expected among Filipino and White immigrant youth. The results partially supported the hypotheses. That is, first-generation Chinese and Korean youth started high school with higher initial GPAs relative to their second-generation counterparts. No generational variations, however, were found among Filipino, Mexican, and White immigrant youth. Because previous research indicated generational variations among Mexican immigrants, further research is needed to examine the inconsistent results. No predictions were made for growth of GPAs due to lack of previous research. Nevertheless, the results indicated that first-generation Korean and Filipino youth had greater declines in GPAs over the

course of high school compared to their second-generation counterparts. No generational variations were found among Chinese, Mexican, and White immigrant youth.

Once financial and human capital factors were adjusted (hypothesis 5), it was predicted that generational variations in initial GPAs would increase due to lower levels of financial and human capital among first-generation youth than their second-generation counterparts. Thus, the generational variations found in the previous model adjusting only for demographic variables were expected to remain significant in this model. The results supported the hypotheses as the generational variations remained significant. However, no new generational variations were found.

Similar to ethnic-generational comparisons, no generational variations were expected once social capital variables were added to the model (hypotheses 6). The results partially supported the hypotheses such that generational variations in the growth of GPAs were no longer significant among Korean and Filipino youth after adjusting for social capital factors. The generational variation, however, remained significant for initial GPAs among Chinese and Korean immigrant groups. That is, first-generation Chinese and Korean youth still had higher initial GPAs than their second-generation counterparts after adjusting for social capital factors. In other words, social capital variables did not explain the advantage of first-generation Chinese and Korean youth over their second-generation counterparts on initial GPAs. Thus, further examination is warranted to determine explanations for the generational variation. Similar to ethnic-generational comparisons, however, it is possible that the constrained effects of demographic

variables, as well as financial, human, and social factors between first- and second-generations limited the amount of generational variation explained.

Although no hypotheses were created for the effects of social capital variables on academic trajectories, examinations of these associations further pointed to the need for unconstrained estimates of capital effects across groups. For example, although home rules did not have significant associations with initial GPAs in the overall sample, this social capital factor was related to lower initial GPAs among Chinese immigrant youth, but higher initial GPAs among Mexican immigrant youth. Also, even parental monitoring, the most consistent predictor of initial GPAs among social capital variables, was not related to initial GPAs of the Filipino and Mexican immigrant youth. Moreover, the effects of social capital factors even differed between Chinese and Korean immigrant youth, who are often combined in research to form the more pan-ethnic grouping of "East Asian." Thus, unconstrained estimates of these effects across groups are necessary in understanding the effects of social capital factors on immigrant students' academic trajectories during high school.

Exploring Academic Trajectories within Ethnic-Generational Groups

The exploratory analyses for determining multiple trajectory classes using LCGA indicated that academic trajectories were typically separated into three classes; high, middle, and low achievers, in each ethnic/ethnic-generational group. Furthermore, the academic trajectories of these groups did not cross with each other, suggesting the importance of initial achievement levels for all ethnic-generational groups. However, despite the similar patterns in classifications, these classes were differentiated by the

initial GPAs and changes over time across groups. For example, the trajectory classes of first- and second-generation Chinese youth, and also first-generation Korean youth indicated higher initial GPAs than those of comparable classes in other ethnic/ethnic-generational groups. The trajectory classes of Mexican immigrant youth, on the other hand, indicated lower initial GPAs than those of comparable classes in other ethnic/ethnic-generational groups. These results reflected the results in the ethnic-generational comparisons where Chinese and Korean immigrant youth started high school with higher, and Mexican immigrant youth started with lower, initial GPAs than third-plus-generation Whites. In addition, lower achieving classes among first-generation Chinese and Korean youth had greater declines over time than higher achieving classes. This suggested that lower achieving students among these immigrant groups were at higher risk of further declines in their achievement levels during high school. The pattern, however, was different for other ethnic/ethnic-generational groups. For example, the most positive growth was found for the low achieving class and the least positive growth were found for the middle achieving class among first-generation Filipino youth and Mexican immigrant youth. These variations in the academic trajectory classes, thus, suggested that high risk students, who experienced the greater decreases in their GPAs during high school, differed across ethnic/ethnic-generational groups. Therefore, these results provided valuable information for future academic interventions of immigrant students.

Finally, the results of multinomial logistic regression revealed that different factors were associated with the lower achieving trajectory classes compared to the high

achieving trajectory class across ethnic/ethnic-generational groups. The most notable finding was that social capital factors (i.e., parental monitoring and parental sacrifice) predicted classification in the high achieving class of Chinese and Korean immigrant youth, but not of Filipino, Mexican, and White immigrant groups. These factors also did not predict class memberships among third-plus-generation White youth. Thus, parent-child interactions regarding schooling, especially parental monitoring and parental sacrifice, had stronger impact on academic achievement among Chinese and Korean immigrant youth. However, these results need to be interpreted with caution, because further disaggregating of the Filipino, Mexican, and White youth into separate generational groups, resulted in much smaller sample sizes, thus limiting the statistical power to detect significance.

Strengths, Limitations, and Future Directions

This study was the first study to examine the academic trajectories of immigrant youth during high school at the ethnic-generational level. Moreover, by examining both fall and spring GPAs from 9^{th} to 12^{th} grade (8 time points total), this study was able to model academic trajectories (i.e., initial level and growth of GPAs) of the entire high school period. The results of analyses reconfirmed the importance of examining academic achievements at this level since immigrant groups experienced different levels and growth in GPAs compared to third-plus-generation White youth. In addition, even when similar differences were found for both generations within ethnic groups (e.g., higher initial GPAs among first- and second-generation Korean youth), Asian immigrant youth experienced generational variations in their academic trajectories. That is, for example,

although both generations of Korean youth indicated higher initial GPAs and more negative growth than third-plus-generation Whites, first-generation Korean youth had relatively higher initial GPAs and more negative growth than their second-generation counterparts before adjusting for social capital factors. By keeping first- and second-generation groups separate, this study was able to capture not only ethnic variations, but also generational differences.

The results of this study also indicated the important differences between ethnic and generational variations. That is, social capital factors were able to explain the generational variations in the growth of GPAs within ethnic groups, but not much of the ethnic-generational variations. Thus, the lack of ethnic-generational variations explained by these factors suggested the needs for unconstrained estimates of these effects across groups and/or searching for additional factors that might explain the ethnic-generational variations. At the same time, because the generational variations in the growth of GPAs were explained by the social capital factors, the results can be used to find ways to decrease the gap in academic achievement between first- and second-generations of Korean and Filipino youth.

The longitudinal examinations of academic achievement in this study provided additional and critical information over previous research because some ethnic-generational groups started with higher GPAs at the beginning of high school, but ended with lower GPAs when they graduated. For example, first-generation Filipino youth started high school with higher GPAs than their second-generation counterparts, first-generation White youth, and third-plus-generation White youth. Their GPAs, however,

were estimated to be lower than all of the above groups by the time they graduated from high school (see Figure 2c). Such changes in achievement levels would not be captured if GPAs were examined only at one time point.

Furthermore, the results of LGM models indicated that social capital factors were in fact associated with academic trajectories of immigrant students. These findings showed that parent-child interactions in school related activities remained important in high school. They also indicated that the types of social capital factors associated with academic trajectories varied across groups. These variations further stressed the importance of future research in understanding the relevant types of social capital in each immigrant group.

Although this study was able to extend the understanding of immigrant youth's academic achievements during high school and their associations with culturally relevant social capital factors, there were some limitations that might influence our findings and require caution in interpretations. First, the data used for this study did not include information about students' dropout from high school. Additional examinations of GPA availability indicated associations between early dropouts of our study (i.e., possible dropouts from school) and their demographic characteristics, as well as their financial, human, and social capital factors. By controlling for these variables, this study tried to minimize the impact of dropout students. However, it is possible that there were some remaining effects of these students in the findings. Second, two of parental involvement factors (i.e., home rules and extracurricular activities) had somewhat low reliability across ethnic-generational groups. Although some associations were found for these

factors, further refinement of the scales is needed for more accurate estimates of their associations. Third, some ethnic-generational groups had sample sizes that were on or below the border of required number in the multinomial logistic regression. For example, the analyses required at least 10 subjects per predictor variables in the model. First-generation Filipino youth, however, did not meet this criterion in the financial and human capital model. Although this criterion was met for other two models, it was possible that their small sample size caused non-significant overall model fit in all three models. Last, as previously mentioned, this study was unable to allow unconstrained estimates of the effects of capital factors on initial level and growth of GPAs in the LGM analyses. This was caused by the huge increase in the model complexity that required more than the available computing power, possibly due to the high missing rates in some predictors and low reliability of some social capital factors.

Future research, therefore, should implement improvements over this study by refining the measurement of parental involvement in school and by identifying more culturally relevant capital factors that relates to academic achievements of immigrant youth. These improvements in measurements may increase the amount of ethnic-generational variations explained in academic trajectories. In addition, because this was the first study to examine academic trajectories of immigrant students at ethnic-generational level, it only examined simple, linear changes of GPAs. Future studies, therefore, can examine more complex trajectories such as curvilinear or quadratic changes to see if these estimates fit the academic trajectories of immigrant youth better. Moreover, future research can examine other types of academic achievement indicators

(e.g., standardized test scores and types of courses taken) to increase the understanding of immigrant youth's academic achievement.

Overall, this study was successful in providing more precise initial knowledge about differential academic trajectories of immigrant youth in high school. Yet, additional research is warranted to further increase our understanding of immigrant students in our school system. As the number of children growing up in immigrant households is projected to become one in three by 2040 (Hernández, et al., 2007; Kao & Rutherford, 2007; Suarez-Orozco & Suarez-Orozco, 2001; U.S. Census Bureau, 2001; Zhou, 1997), the knowledge and understanding obtained from this study and future research will be valuable to the future of immigrant youth as well as to our society as these youth enter post-secondary education and the work force, and contribute to the overall economy.

REFERENCES

Alva, S. A. (1993). Differential patterns of achievement among Asian-American adolescents. *Journal of Youth and Adolescence, 22*(4), 407-423.

Astone, N. M., & McLanahan, S. S. (1991). Family structure, parental practices and high school completion. *American Sociological Review, 56*, 309-320.

Bankston, C. L., & Zhou, M. (2002). Being well vs. doing well: Self-esteem and school performance among immigrant and non-immigrant racial and ethnic groups. *International Migration Review, 36*(2), 389-415.

Barringer, H. R., Takeuchi, D. T., & Xenos, P (1990). Education, occupational prestige, and income of Asian Americans, *Sociology of Education, 63*(1), 27-43.

Blair, S. L., & Qian, Z. (1998). Family and Asian students' educational performance: A consideration of diversity. *Journal of Family Issues, 19*, 355-374.

Bloom, B. S. (1980). The new direction for educational research: Alterable variables. *Phi Delta Kappan, 61*, 382–385.

Bobbett, G. C., French, R. L., Achilles, C. M., & Bobbett, N. C. (1995). *An analysis of Nevada's report cards on high schools*. Paper presented at the annual meeting of the Mid-South Educational Research Association. (ERIC Document Reproduction Service No.: ED 397-084).

Bourdieu, P. (1985). The forms of capital. In J. G. Richardson (Ed), *Handbook of theory and research for the sociology of education*. New York: Greenwood.

Broh, B. A. (2002). Linking extracurricular programming to academic achievement: Who benefits and why? *Sociology of Education, 75*, 69-91.

Browne, M. C., & Cudeck, R. (1993). Alternative way of assessing model fit. In K. A. Bollen & J. S. Long (Eds), *Testing structural equation models* (pp.136-162). Newbury Park, CA: Sage.

Caplan, N., Choy, M. H., & Whitmore, J. K. (1991). *Children of the boat people: A study of educational success*. Ann Arbor, MI: University of Michigan Press.

Catsambis, S. (2001). Expanding knowledge of parental involvement in children's secondary education: Connections with high school seniors' academic success. *Social Psychology of Education, 5*, 149-177.

Chao, R. K. (1996). Chinese and European-American mothers' beliefs about the role of parenting in children's school success. *Journal of Cross-Cultural Psychology, 27*, 403-423.

Chao, R. K. (2000). Cultural explanations for the role of parenting in the school success of Asian American children. In R. W. Taylor & M. C. Wang (Eds.), *Resilience across contexts* (pp. 333-363). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Chao, R. K. (2001). Extending research on the consequences of parenting style for Chinese Americans and European Americans. *Child Development, 72*(6), 1832-1843.

Chao, R. K. (2006). The prevalence and consequences of adolescents' language brokering for their immigrant parents. In M. Bornstein & L. R. Cote (Eds.), *Acculturation and parent-child relationships: Measurement and development* (pp. 271-296). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Chao, R. K., & Kaeochinda, K. F. (2010). Parental sacrifice and acceptance as distinct dimensions of parental support among Chinese and Filipino American adolescents. In S. T.Russell, L. J. Crockett, & R. K. Chao. (Eds), *Asian American parenting and parent-adolescent relationships: Advancing responsible adolescent development* (pp.61-77). New York: Springer Science + Business Media.

Chao, R. K., & Kanatsu, A. (2008). Beyond socioeconomics: Explaining ethnic group differences in parenting through cultural and immigration processes. *Applied developmental science, 12*(4), 181-187.

Chao, R. K., Kanatsu, A., Stanoff, N., Padmawidjaja, I., & Aque, C. (2009). Diversities in meaning and practice: The parental involvement of Asian immigrants. In E. Nancy and R. K. Chao (Eds.), *Families, Schools, and the Adolescent: Connecting Research, Policy, and Practice.* New York: Teachers College, Columbia University.

Chen, S. X., Bond, M. H., & Tang, D. (2007). Decomposing filial piety into filial attitudes and filial enactments. *Asian Journal of Social Psychology, 10*, 213-223.

Christenson, S., Rounds, T., & Gorney, D. (1992). Family factors and student achievement: An avenue to increase students' success. *School Psychology Quarterly, 7*(3), 178-206.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, 95–120.

Coleman, J. S. (1990). *Equality and achievement in education.* Boulder, CO: Westview Press.

Crosnoe, R. (2001). Academic orientation and parental involvement in education during high school. *Sociology of Education, 74,* 210-230.

Curran, P. J. (2000). A latent curve framework for studying developmental trajectories of adolescent substance use. In J. Rose, L. Chassin, C. Presson, & J. Sherman (Eds.), *Multivariate applications in substance use research*, (pp. 1-42). Hillsdale, NJ: Erlbaum.

Downey, D. B. (1995). When bigger is not better: Family size, parental resources, and children's educational performance. *American Sociological Review 60,* 746-61.

Duncan, T. E., Duncan, S. C., Stryker, L. A., Li, F., & Alpert, A. A. (1999). *An introduction to latent growth curve modeling: Concepts, issues, and applications*. Mahwah, NJ: Lawrence Erlbaum.

Epstein, J. L. (1992). School and family partnerships. In M. Alkin (Ed.), *Encyclopedia of educational research* (6th ed.) (pp.1139-1151). New York: Macmillan.

Fan, X. (2001). Parental involvement and students' academic achievement: A growth modeling analysis. *Journal of Experimental Education, 70*, 27-61.

Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-Analysis. *Educational Psychology Review*, *13*(1), 1-22.

Fehrmann, P. G., Keith, T. Z., & Reimers, T. (1987). Home influence on school learning: Direct and indirect effects of parental involvement on high school grades. *Journal of Educational Research, 806,* 330-337.

Fuligni, A. (1997). The academic achievement of adolescents from immigrant families: The roles of family background, attitudes, and behavior. *Child Development, 68,* 351-363.

Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents from Asian, Latin American, and European backgrounds. *Child Development, 70,* 1030-1044.

Fuligni, A. J., & Witkow, M. (2004). The postsecondary educational progress of youth from immigrant families. *Journal of Research on Adolescence, 14*, 159-183.

Fuligni, A. J., & Yoshikawa, H. (2003). Socioeconomic resources, parenting, and child development among immigrant families. In M. Bornstein & R. Bradley (Eds.), *Socioeconomic status, parenting, and child development* (pp. 107-124). Mahwah, NJ: Lawrence Erlbaum.

Gibson, M. A. (1991). Minorities and schooling: Some implications. In M. Gibson & J. Ogbu (Eds.), *Minority status and schooling: A comparative study of immigrant and involuntary minorities* (pp. 169-203). New York: Garland Publishing.

Gibson, M. A., & Bhachu, P. K. (1991). The dynamics of educational decision making: A comparative study of Sikhs in Britain and the United States. In: M. A. Gibson & J. U. Obgu (Eds.), *Minority status and schooling: A comparative study of immigrant and involuntary minorities* (pp. 63-96). New York: Garland.

Glick, J. E., & White, M. J. (2003). The academic trajectories of immigrant youth: Analysis within and across cohorts. *Demography, 40*, 759-784.

Gregory, A., & Weinstein, R. S. (2004). Connection and regulation at home and in school: Predicting growth in achievement for adolescents. *Journal of Adolescent Research*, *4*, 405-427.

Grodsky, E., Warren, J., & Kalogrides, D. (2009). State high school examination and NAEP long-term trends in reading and mathematics, 1971-2004. *Educational Policy, 23,* 589-614.

Hagan, J., MacMillan, R., & Wheaton, B. (1996). New kid in town: Social capital and the life course effects of family migration on children. *American Sociological Review, 61*, 368-385.

Hannum, E., & Fuller, B. (2002) Social resources, social institutions and educational stratification: Contributions of cross-cultural research. In B. Fuller & E. Hannum (Eds), *Research in sociology of education 13:Schooling and social capital in diverse cultures* (pp. 171-180). Boston, MA: JAI/Elsevier Science.

Hao, L., & Bonstead-Bruns, M. (1998). Parent-child difference in educational expectations and the academic achievement of immigrant and native students. *Sociology of Education, 71*, 175-198.

Hardway, C., & Fuligni, A. J. (2006). Dimensions of family connectedness among adolescents with Chinese, Mexican, and European backgrounds. *Developmental Psychology, 42*, 1246-1258.

Henry, C. S., Merten, M. J., Plunkett, S. W., & Sands, T. (2008). Neighborhood, parenting, and adolescent factors and academic achievement in Latino adolescents from immigrant families. *Family Relations, 57*, 580–591.

Hernández, D. J., Denton, N. A., & Macartney. S. E. (2007). Family circumstances of children in immigrant families: Looking to the future of America. In J. Lansford, K. Deater-Deckard, & M. Bornstein (Eds.), *Immigrant families in contemporary society*. New York: Guilford Press.

Ho, E., & Willms, D. J. (1996). Effects of parental involvement on eighth grade achievement. *Sociology of Education, 69*, 126-141.

Hong, S., & Ho, H. (2005). Direct and indirect longitudinal effects of parental involvement on student achievement: Second-order latent growth modeling across ethnic groups. *Journal of Educational Psychology, 97*, 32-42.

Huang, S. L., Waxman, H. C., & Houston, R. (1993). Comparing school-level environment of first year and experienced-support teacher in inner city schools. In D. L. Fisher (Ed.), *The study of learning environments* (7th ed.) (pp. 106–111). Perth, Australia: Curtin University of Technology.

Kanatsu, A., & Chao, R. K. (2005, April). Parental involvement in school and its relation to the school performance of immigrant youth. Paper symposium presented at the Society for Research in Child Development, Atlanta, GA.

Kanatsu, A., & Chao, R. K. (2007). Asian immigrant fathers as primary caregivers. In S. Chuang (Ed.), *On New Shores: Understanding Immigrant Fathers in North America*. Lanham, MD: Lexington Books.

Kao, G. (1995). Asian Americans as model minorities? A look at their academic performance. *American Journal of Education, 103*, 121-159.

Kao, G., & Rutherford, L. T. (2007). Does social capital still matter? Immigrant minority disadvantage in school-specific social capital and its effects on academic achievement. *Sociological Perspectives, 50*, 27-52.

Kao, G., & Thompson, J. S. (2003). Racial and ethnic stratification in educational achievement and attainment. *Annual Review of Sociology, 29*, 417-442.

Kao, G., & Tienda, M. (1995). Optimism and achievement: The educational performance of immigrant youth. *Social Science Quarterly, 76*(1), 1–19.

Kao, G., Tienda, M., & Schneider, B. (1996). Racial and ethnic variation in academic performance. *Research in Sociology of Education and Socialization, 11*, 263–97.

Keith, P. B., & Lichtman, M. V. (1994). Does parental involvement influence the academic achievement of Mexican-American eighth graders? Results from the National Education Longitudinal Study. *School Psychology Quarterly, 9*, 256–273.

Keith,T. Z. (1991). Parent involvement and achievement in high schools. In S. Silvern (Ed.), *Advances in reading/language research: Literacy through family, community, and school interaction* (5th ed.), Greenwich, CT: JAI Press.

Keith, T. Z., Keith, P. B., Troutman, G. C., Bickley, P. G., Trivette, P. S., & Singh, K. (1993). Does parental involvement affect eighth-grade student achievement? Structural analysis of national data. *School Psychology Review, 22*, 474-496.

Keith, T. Z., Reimers, T. M., Fehrmann, P. G., Pottebaum, S. M., and Aubey, L. W. (1986). Parental involvement, homework, and TV times: Direct and indirect effects on high school achievement. *Journal of Educational Psychlogy. 78*, 373–380.

Kenward, M. G., & Molenberghs, G. (1998). Likelihood based frequentist inference when data are missing at random. *Statistical Science, 12***,** 236–247.

Kim, E. (2002). The relationship between parental involvement and children's educational achievement in the Korean Immigrant Family. *Journal of Comparative Family Studies, 33*(4), 529-543.

Kitano, H. H. L., & Sue, S. (1973). The model minorities. *Journal of Social Issues, 29,* 1-9.

Kohl, G. O., Lengua, L. J., & McMahon, R. J. (2000). Parent involvement in school conceptualizing multiple dimensions and their relations with family and demographic risk factors. *Journal of School Psychology, 38*, 501-523.

Lai, E., & Arguelles, D. (2003). *The new faces of Asian Pacific America: Numbers, diversity, and change in the 21st century*. San Francisco, CA: Asian Week.

Lee, S. (1996). *Unraveling the "model minority" stereotype: Listening to Asian American youth.* New York: Teachers College Press.

Leong, F. T. L., Chao, R. K., & Hardin, E. (2000). Asian American adolescents: A research review to dispel the model minority myth. *Adolescent experiences: Cultural and Economic Diversity in Adolescent Development, 10*, 179-207.

Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). New York: Wiley.

Mare, R. D., & Winship, C. (1988). Ethnic and racial patterns of educational attainment and school enrollment. In G. Sandefur & M. Tienda (Eds.), *Divided opportunities: Minorities, poverty, and social policy* (pp. 173-195, 202-203). New York: Plenum Press.

Marjoribanks, K. (1983). The evaluation of a family learning model. *Studies in Educational Evaluation. 9,* 343-351.

Mau, W. (1997). Parental influences on the high school students' academic achievement: A comparison of Asian immigrants, Asian Americans, and white Americans. *Psychology in the Schools, 34*, 267-277.

Mouw, T., & Xie, Y. (1999). Bilingualism and the academic achievement of first and second generation Asian Americans: Accommodation with or without assimilation. *American Sociological Review, 64*, 232-252.

Muller, C., & Kerbow, D. (1993). Parent involvement in the home, school, and community. In B. Schneider & J. S. Coleman (Eds.), *Parents, their children, and schools* (pp. 13-42). Boulder, CO: Westview Press.

Muthén, B. (1984). A general structural equation model with dichotomous, ordered categorical, and continuous latent variable indicators. *Psychometrika, 49*, 115-132.

Muthén, B. O., & Muthén, L. K. (2000). Integrating person-centered and variable-centered analysis: Growth mixture modeling with latent trajectory classes. *Alcoholism: Clinical and Experimental Research, 24*, 882-891.

Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide* (5th ed.). Los Angeles: Muthén & Muthén.

National Center for Education Statistics (1994). *The 1993 Study of Postsecondary Faculty*. Washington, DC: U.S. Department of Education, Office of Research and Improvement.

National Center for Education Statistics (1998, 2005, 2007). A*nnual Report. The Digest of Education Statistics.* Retrieved October 20, 2010 from http://nces.ed.gov/programs/digest/.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Padilla, A., & Gonzalez, R. (2001). Academic performance of immigrant and U.S. born Mexican heritage students: Effects of schooling in Mexico and bilingual English language instruction. *American Educational Research Journal, 38*, 727-742.

Peng, S. S., & Wright, D. (1994). Explanation of academic achievement of Asian students. *Journal of Educational Research, 87*, 346-352.

Phinney, J. S., Ong, A., & Madden, T. (2000). Cultural values and intergenerational value discrepancies in immigrant and non-immigrant families. *Child Development, 71*(2), 528-539.

Plunkett, S. W., Behnke, A. O., Sands, T., & Choi, B. Y. (2009). Adolescents' reports of parental engagement and academic achievement in immigrant families. *Journal of Youth and Adolescence, 38,* 257–268.

Pong, S., Hao, L., & Gardner, E. (2005). The roles of parenting styles and social capital in the school performance of immigrant Asian and Hispanic adolescents. *Social Science Quarterly, 86*(4), 928-950.

Portes, A. (1998). Social Capital: its origins and applications in modern sociology. *Annual Review of Sociology, 24*, 1-24.

Portes, A., & Rumbaut, R. G. (2001). *Legacies: The story of the second generation.* Berkeley: University of California Press.

Powell, D. A., & Schafer, W. D. (2001). The robustness of the likelihood ratio chi-square test for structural equation models: A meta-analysis. *Journal of Educational and Behavioral Statistics, 26*, 105-132.

Rosenthal, D. A., & Feldman, S. S. (1991). The influence of perceived family and personal factors on self-reported school performance of Chinese and Western high school students. *Journal of Research in Adolescence, 1*, 135-154.

Rumbaut, R. (1995). The new Californians: Comparative research findings on the educational progress of immigrant children. In R. Rumbaut & W. Cornelius (Eds.), *California's immigrant children* (pp. 17-69). San Diego, CA: Center for U.S.-Mexican Studies.

Rumberger, R. W., Ghatak, R., Poulos, G, Ritter, P. L., & Dornbusch, S. M. (1990). Family influences on dropout behavior in one California high school. *Sociology of Education, 63*, 283–299.

Schmidley, A. D. (2001). *Profile of the foreign-born population in the United States: 2000* (U.S. Census Bureau Current Population Report No. P23-206). Washington, DC: U.S. Government Printing Office.

Schneider, B., & Lee, Y. (1990). A model for academic success: the school and home environment of Asian students. *Anthropology and Education Quarterly*, *21*(4), 358-377.

Singh, K., Bickley, P. G., Trivette, P. S., Keith, T. Z., Keith, P. B., & Anderson, E. (1995). The effects of four components of parental involvement on eighth grade student achievement: Structural analysis of NELS-88 data. *School Psychology Review, 24*, 299-317.

SPSS Inc. (2007). SPSS Base 17.0 for Windows User's Guide. SPSS Inc., Chicago, IL.

Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development, 63,* 1266-1281.

Stevenson, D. L., & Baker, D. P. (1987). Family-school relation and the child's school performance. *Child Development, 58,* 348-357.

Stevenson, H., & Stigler, J. (1992). *The learning gap: Why our schools are failing and what we can learn from Japanese and Chinese education*. New York: Summit Books.

Suárez-Orozco, C., & Suárez-Orozco, M. (1995). *Transformations: Immigration, family life, and achievement motivation among Latino adolescents*. Stanford, CA: Stanford University Press.

Suárez-Orozco, C., & Suárez-Orozco, M. (2001). *Children of immigration.* Cambridge, MA: Harvard University Press.

Suárez-Orozco, C., Suárez-Orozco, M., & Todorova, I. (2008). *Learning a new land: Immigrant students in American society.* Cambridge: Harvard University Press.

Suárez-Orozco, M. (1989). *Central American refugees and U.S. high schools: A psychosocial study of motivation and achievement*. Stanford, CA: Stanford University Press.

Sue, S., & Okazaki, S. (1990). Asian American educational achievement. *American Psychologist, 45*, 913-920.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed). Boston:

Allyn and Bacon.

Teachman, J. (1987). Family background, educational resources and educational attainment. *American Sociological Review, 52*, 548-557.

Teachman, J., Paasch, K., & Carver, K. (1996). Social capital and dropping out of school early. *Journal of Marriage and the Family, 58*, 773-783.

Telzer, E. H., & Fuligni, A. J. (2009). A longitudinal diary study of family assistance and academic achievement among adolescents from Mexican, Chinese, and European Backgrounds. *Journal of Youth and Adolescence, 38*, 560-571.

Tseng, V. (2004). Unpacking immigration in youth's academic and occupational pathways. *Child Development, 77*(5), 1434-1445.

U.S. Census Bureau. (2001). Overview of race and Hispanic origin; Census 2000 brief. Retrieved October 20, 2010, from http://www.census.gov/prod/2001pubs/cenbr01-1.pdf.

U.S. Census Bureau. (2004). Educational attainment in the United States: 2003; Population Characteristics. Retrieved October 20, 2010, from http://www.census.gov/prod/2004pubs/p20-550.pdf.

Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring*. New York: State University of New York Press.

Walberg, H. J. (1986). Synthesis of research on teaching. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd Ed.) (pp. 214–229). New York: MacMillan.

Warren, J. R. (1996). Educational inequality among White and Mexican-origin adolescents in the American Southwest: 1990. *Sociology of Education, 69*, 142-158.

Yan, W., & Lin, Q. (2005). Parent involvement and math achievement: Contrast across racial and ethnic groups. *Journal of Educational Research, 99*(2), 116-127.

Zhang, Y. (2003). Immigrant generational differences in academic achievement: The case of Asian American high school students. In C. C. Park, A. L. Goodwin, S. J. Lee (Eds.), *Asian American Identities, Families, and Schooling* (pp. 201-224). Charlotte, NC: Information Age Publishing.

Zhou, M. (1997). Social capital in Chinatown: The role of community-based organizations and families in the adaptation of the younger generation. In L. Weis

& M. S. Seller (Eds.), *Beyond Black and White: New voices, new faces in the United States schools* (pp. 181-206). Albany, NY: State University of New York Press.

Zhou, M., & Bankston, C. L. III. (1994). Social capital and the adaptation of the second generation: The case of Vietnamese youth in New Orleans East. *International Migration Review*, *28*(4), 775-799.

Zhou, M., & Bankston, C. L. III. (1998). *Growing up American: How Vietnamese children adapt to life in the United States*. New York: Russell Sage Foundation.

Table 1a. Demographic Factors: Cohort and School.

	Cohort			School								
	2002	**2003**	**2004**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
3rd+ Generation White	190	382	183	54	76	148	22	7	374	63	11	**755**
1st Generation Chinese	153	112	11	68	80	60	4	25	21	1	17	**276**
2nd Generation Chinese	253	215	7	124	104	77	17	66	17	4	66	**475**
1st Generation Korean	120	95	4	91	52	30	24	13	9	0	0	**219**
2nd Generation Korean	267	217	5	224	81	28	65	77	11	2	1	**489**
1st Generation Filipino	36	94	25	19	8	1	29	7	44	42	5	**155**
2nd Generation Filipino	80	152	33	81	17	6	15	23	68	51	4	**265**
1st Generation Mexican	65	89	7	8	3	5	86	1	15	15	28	**161**
2nd Generation Mexican	187	253	7	39	17	26	203	15	22	24	101	**447**
1st Generation White	31	47	8	1	2	13	43	2	19	6	0	**86**
2nd Generation White	44	63	19	12	7	19	30	3	44	8	3	**126**
Total	**1426**	**1719**	**309**	**721**	**447**	**413**	**538**	**239**	**644**	**216**	**236**	**3454**

Table 1b. Demographic Factors: Gender of Adolescents and Primary Caregivers.

	Gender of Adolescents		Primary Caregivers			
	Female	**Male**	**Mother**	**Father**	**Other**	**Total**
3rd+ Generation White	361	391	588	118	36	**755**
1st Generation Chinese	137	138	223	27	23	**276**
2nd Generation Chinese	238	236	387	65	20	**475**
1st Generation Korean	106	113	171	20	24	**219**
2nd Generation Korean	243	246	403	47	31	**489**
1st Generation Filipino	71	84	106	30	16	**155**
2nd Generation Filipino	122	141	202	33	26	**265**
1st Generation Mexican	95	64	134	13	13	**161**
2nd Generation Mexican	242	205	369	44	28	**447**
1st Generation White	43	42	70	9	5	**86**
2nd Generation White	62	64	100	20	6	**126**
Total	**1720**	**1724**	**2753**	**426**	**228**	**3454**

Table 2a. Financial and Human Capital: Homeownership, Employment Status, Education, and Living Situation.

	Homeownership		Mothers' Employment		Fathers' Employment		Parents' Education		Living Situation				
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Mean**	***SD***	**Two-Parent**	**Mother Only**	**Father Only**	**Other**	**Total**
3rd+ Generation White	596	152	547	200	702	39	6.63	1.06	554	68	23	107	**755**
1st Generation Chinese	186	84	173	96	235	29	6.49	1.46	219	37	7	12	**276**
2nd Generation Chinese	415	50	342	123	427	31	6.54	1.59	413	44	6	11	**475**
1st Generation Korean	119	97	134	79	190	19	6.76	0.98	167	28	9	14	**219**
2nd Generation Korean	342	143	355	125	445	27	6.63	1.04	412	50	6	18	**489**
1st Generation Filipino	78	77	126	21	132	16	6.62	1.18	134	13	4	4	**155**
2nd Generation Filipino	224	38	240	23	236	22	6.49	1.16	218	24	0	21	**265**
1st Generation Mexican	44	115	73	78	130	10	4.43	1.44	138	16	1	5	**161**
2nd Generation Mexican	215	226	283	144	356	39	4.66	1.55	331	83	5	23	**447**
1st Generation White	51	32	48	35	66	9	6.82	1.18	65	11	2	4	**86**
2nd Generation White	97	29	88	36	107	11	6.38	1.19	85	24	5	11	**126**
Total	**2367**	**1043**	**2409**	**960**	**3026**	**252**	**6.27**	**1.47**	**2736**	**398**	**68**	**230**	**3454**

Table 2b. Financial and Human Capital: Years in the U.S. and English Fluency.

	Adolescents' Years in the U.S.		Parents' Years in the U.S.		Adolescents' English Fluency		Parents' English Fluency		
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Total**
3rd+ Generation White	14.52	0.37	45.38	5.75	4.97	0.25	4.96	0.28	**755**
1st Generation Chinese	6.89	3.85	9.19	9.00	4.18	0.88	2.93	1.01	**276**
2nd Generation Chinese	14.36	0.33	22.97	7.88	4.56	0.69	3.49	0.96	**475**
1st Generation Korean	6.16	4.34	6.77	5.44	4.08	0.84	2.70	0.90	**219**
2nd Generation Korean	14.48	0.39	21.96	7.17	4.55	0.67	3.38	0.95	**489**
1st Generation Filipino	7.04	4.23	9.61	8.23	4.41	0.70	4.16	0.81	**155**
2nd Generation Filipino	14.41	0.34	23.73	7.95	4.71	0.62	4.46	0.66	**265**
1st Generation Mexican	9.47	3.58	12.10	7.43	4.35	0.75	2.93	1.26	**161**
2nd Generation Mexican	14.45	0.42	30.27	9.39	4.54	0.64	3.67	1.22	**447**
1st Generation White	8.58	3.75	14.64	13.94	4.54	0.72	3.73	1.03	**86**
2nd Generation White	14.50	0.34	37.70	9.61	4.87	0.52	4.69	0.64	**126**
Total	**12.99**	**3.46**	**27.98**	**15.62**	**4.59**	**0.69**	**3.87**	**1.14**	**3454**

Table 3a. Social Capital: Participation in School, Home Rules, Helps with Homework, Discussion about Future Plans.

	Participation in school related activities			**Home rules about TV, homework, and grade**			**Helps with homework (single item)**			**Discussion about future Academic Plans**			
	Mean	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Total**
3rd+ Generation White	2.63	0.72	230 (30.5%)	0.72	0.30	230 (30.5%)	3.47	0.80	231 (30.6%)	2.75	0.81	227 (30.1%)	**755**
1st Generation Chinese	2.11	0.75	100 (36.2%)	0.74	0.31	101 (36.6%)	3.22	1.01	101 (36.6%)	3.09	0.76	100 (36.2%)	**276**
2nd Generation Chinese	2.11	0.68	114 (24.0%)	0.75	0.31	112 (23.6%)	3.20	0.92	119 (25.1%)	3.04	0.74	113 (23.8%)	**475**
1st Generation Korean	2.07	0.71	71 (32.4%)	0.66	0.33	72 (32.9%)	3.16	1.02	72 (32.9%)	3.26	0.62	68 (31.1%)	**219**
2nd Generation Korean	2.06	0.73	130 (26.6%)	0.74	0.30	131 (26.8%)	3.14	1.02	135 (27.6%)	3.22	0.70	128 (26.2%)	**489**
1st Generation Filipino	1.89	0.65	51 (32.9%)	0.69	0.32	51 (32.9%)	2.98	1.05	51 (32.9%)	2.73	0.86	51 (32.9%)	**155**
2nd Generation Filipino	2.17	0.70	64 (24.2%)	0.73	0.27	65 (24.5%)	3.14	0.94	68 (25.7%)	3.02	0.73	64 (24.2%)	**265**
1st Generation Mexican	2.16	0.79	71 (44.1%)	0.72	0.30	75 (46.6%)	2.83	1.11	75 (46.6%)	2.99	0.86	71 (44.1%)	**161**
2nd Generation Mexican	2.11	0.75	188 (42.1%)	0.69	0.30	197 (44.1%)	2.99	1.08	196 (43.8%)	2.79	0.79	186 (41.6%)	**447**
1st Generation White	1.98	0.66	27 (31.4%)	0.81	0.26	27 (31.4%)	3.27	0.85	27 (31.4%)	2.89	0.84	27 (31.4%)	**86**
2nd Generation White	2.50	0.76	35 (27.8%)	0.74	0.28	35 (27.8%)	3.48	0.78	35 (27.8%)	2.99	0.80	35 (27.8%)	**126**
Total	**2.22**	**0.76**	**1081 (31.3%)**	**0.72**	**0.30**	**1096 (31.7%)**	**3.21**	**0.96**	**1110 (32.1%)**	**2.97**	**0.79**	**1070 (31.0%)**	**3454**

Table 3b. Social Capital: Extracurricular Activities, Extra Books and Materials, Parental Monitoring, and Parental Sacrifice.

	Extracurricular activities			**Extra books and materials (single item)**			**Parental Monitoring**			**Parental Sacrifice**			
	Mean	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Mean**	***SD***	**Missing**	**Total**
3rd+ Generation White	0.29	0.31	231 (30.6%)	2.94	1.05	235 (31.1%)	2.51	0.46	155 (20.5%)	4.22	0.74	161 (21.3%)	**755**
1st Generation Chinese	0.52	0.37	103 (37.3%)	3.10	0.97	103 (37.3%)	2.45	0.43	78 (28.3%)	4.38	0.64	79 (28.6%)	**276**
2nd Generation Chinese	0.50	0.36	114 (24.0%)	3.07	0.97	115 (24.2%)	2.42	0.42	79 (16.6%)	4.40	0.62	80 (16.8%)	**475**
1st Generation Korean	0.49	0.36	73 (33.3%)	3.10	0.90	73 (33.3%)	2.49	0.43	51 (23.3%)	4.33	0.71	54 (24.7%)	**219**
2nd Generation Korean	0.55	0.35	134 (27.4%)	3.13	0.95	133 (27.2%)	2.46	0.44	100 (20.4%)	4.44	0.63	100 (20.4%)	**489**
1st Generation Filipino	0.25	0.29	51 (32.9%)	2.61	1.06	54 (34.8%)	2.28	0.53	39 (35.2%)	4.50	0.66	39 (35.2%)	**155**
2nd Generation Filipino	0.29	0.31	65 (24.5%)	2.72	1.04	68 (25.7%)	2.32	0.50	46 (17.4%)	4.44	0.68	46 (17.4%)	**265**
1st Generation Mexican	0.27	0.30	76 (47.2%)	2.70	1.08	77 (47.8%)	2.42	0.51	32 (19.9%)	4.59	0.56	34 (21.1%)	**161**
2nd Generation Mexican	0.22	0.29	203 (45.4%)	2.75	1.09	194 (43.4%)	2.38	0.46	89 (19.9%)	4.52	0.59	90 (20.1%)	**447**
1st Generation White	0.29	0.31	27 (31.4%)	2.66	0.97	28 (32.6%)	2.41	0.48	18 (20.9%)	4.53	0.64	19 (22.1%)	**86**
2nd Generation White	0.29	0.31	35 (27.8%)	2.91	1.02	37 (29.4%)	2.46	0.45	19 (15.1%)	4.28	0.65	22 (17.5%)	**126**
Total	**0.38**	**0.35**	**1112 (32.2%)**	**2.94**	**1.02**	**1117 (32.3%)**	**2.43**	**0.46**	**706 (20.4%)**	**4.39**	**0.67**	**724 (21.0%)**	**3454**

Table 4a. Demographic Factors across Availability of GPAs.

	Categories	Number of Available GPAs			
		4 years	**3 years**	**2 years**	**1 year**
Cohort $\chi^2(6) = 305.61^{***}$	**2002**	464	183	300	479
	2003	726	411	329	253
	2004	204	34	53	18
School $\chi^2(21) = 1070.73^{***}$	**1**	360	174	103	84
	2	114	85	167	81
	3	212	63	70	68
	4	37	45	98	358
	5	158	30	26	25
	6	334	142	103	65
	7	67	32	82	35
	8	112	57	33	34
Gender $\chi^2(3) = 11.80^{**}$	**Male**	662	340	361	361
	Female	732	286	317	385
Gender of Primary Caregiver $\chi^2(3) = 18.08^{***}$	**Mother**	1160	507	521	565
	Other	230	107	149	168

Note: ***p<.001, **p<.01, *p<.05. Numbers represent observed counts for Chi-square tests and mean (standard deviation) for Analysis of Variance.

Table 4b. Financial and Human Capital across Availability of GPAs.

	Categories	Number of Available GPAs			
		4 years	**3 years**	**2 years**	**1 year**
Homeownership $\chi^2(3) = 114.15^{***}$	**Owner**	1068	446	451	402
	Non-Owner	319	174	219	331
Mother Work $\chi^2(3) = 17.21^{**}$	**Working**	1028	436	485	460
	Non-Working	359	182	179	240
Father Work $\chi^2(3) = 2.19$	**Working**	1270	560	586	610
	Non-Working	98	43	52	59
Parent Education $F(3, 3233) = 33.57^{***}$		6.47 (1.37)	6.27 (1.44)	6.35 (1.37)	5.78 (1.68)
Living Situation $\chi^2(3) = 36.00^{***}$	**Two-Parent**	1155	523	511	547
	Other	237	103	167	189
Youth Years in the US $F(3, 3096) = 1.00$		12.95 (3.48)	13.16 (3.30)	13.09 (3.42)	12.86 (3.58)
Parent Years in the US $F(3, 1987) = 1.00$		28.02 (15.40)	27.84 (15.41)	27.10 (16.42)	29.58 (15.95)
Youth English Fluency $F(3, 2988) = 6.73^{***}$		4.66 (.63)	4.55 (.75)	4.57 (.70)	4.52 (.73)
Parent English Fluency $F(3, 2969) = 5.84^{**}$		3.96 (1.10)	3.80 (1.18)	3.82 (1.19)	3.75 (1.17)

Note: $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. Numbers represent observed count (expected count) for Chi-square tests and mean (standard deviation) for Analysis of Variance.

Table 5a. Coefficients (standard error) of Ethnic-Generational Moderators in the LGM.

	Model 1	Model 2	Model 3
Intercepts			
3rd+ Gen European	**2.906*** (.040)**	**2.679*** (.050)**	**2.684*** (.049)**
1st Gen Chinese	**.528*** (.055)**	**.670*** (.067)**	**.714*** (.061)**
2nd Gen Chinese	**.453*** (.045)**	**.507*** (.053)**	**.583*** (.052)**
1st Gen Korean	**.390*** (.059)**	**.565*** (.072)**	**.586*** (.066)**
2nd Gen Korean	**.148** (.046)**	**.246*** (.055)**	**.338*** (.058)**
1st Gen Filipino	.052 (.067)	**.184* (.075)**	**.248*** (.068)**
2nd Gen Filipino	.062 (.053)	**.133* (.059)**	**.159** (.055)**
1st Gen Mexican	**-.807*** (.069)**	**-.511*** (.076)**	**-.535*** (.070)**
2nd Gen Mexican	**-.761*** (.049)**	**-.497*** (.055)**	**-.494*** (.050)**
1st Gen White	-.087 (.089)	-.011 (.091)	-.006 (.086)
2nd Gen White	**-.158* (.072)**	-.095 (.072)	-.121† (.070)
Slopes			
3rd+ Gen European	**-.010* (.004)**	**-.009* (.004)**	**-.011* (.004)**
1st Gen Chinese	**-.031*** (.009)**	**-.034*** (.009)**	**-.034*** (.009)**
2nd Gen Chinese	**-.023** (.007)**	**-.026*** (.007)**	**-.026*** (.007)**
1st Gen Korean	**-.052*** (.010)**	**-.058*** (.010)**	**-.057*** (.010)**
2nd Gen Korean	**-.029*** (.008)**	**-.032*** (.008)**	**-.031*** (.008)**
1st Gen Filipino	**-.037** (.011)**	**-.038*** (.011)**	**-.039*** (.011)**
2nd Gen Filipino	-.003 (.009)	-.005 (.009)	-.004 (.009)
1st Gen Mexican	.013 (.014)	.005 (.014)	.006 (.014)
2nd Gen Mexican	**.028** (.009)**	**.019* (.009)**	**.018* (.009)**
1st Gen White	.012 (.017)	.010 (.017)	.011 (.016)
2nd Gen White	.000 (.012)	-.001 (.012)	.001 (.012)
I with S	**-.021*** (.002)**	**-.020*** (.002)**	**-.019*** (.002)**

Note: 3rd+ Generation White is the reference group. Coefficients for other groups represent the difference from this reference group. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 5b. Coefficients (standard error) of Covariates and Predictors in the LGM.

	Model 1	Model 2	Model 3
Intercepts			
Cohort 2	-	-	-
Cohort3	**.128** (.042)**	**.155*** (.041)**	**.106* (.041)**
School CE	-	**-.074* (.036)**	**-.114** (.034)**
School DB	**.175*** (.042)**	**.120** (.043)**	**.098* (.042)**
School SP	-	-	-
School VN	**-.082* (.041)**	-	-
School WH	**.212*** (.052)**	**.114* (.053)**	-
Male	**-.238*** (.023)**	**-.224*** (.022)**	**-.207*** (.023)**
Mother PCG	**.115*** (.029)**	**.098** (.028)**	**.071* (.029)**
Homeowner		**.126*** (.027)**	**.135*** (.027)**
Mother Work		-	-
Father Work		-	-
P Education		**.031*** (.005)**	**.028*** (.005)**
Two-Parent Household		**.157*** (.028)**	**.133*** (.028)**
A Year in U.S.		-	-
P Year in U.S.		**.003* (.001)**	-
A English		**.039*** (.004)**	**.038*** (.004)**
P English		-	-
Participation			**.088** (.028)**
Home Rules			-
Helps with HW			-
Discuss			**.103** (.034)**
Ext. Curricular			**-.298*** (.084)**
Ext. Materials			-
Parental Monitoring			**.354*** (.054)**
Parental Sacrifice			-

Note: 3rd+ Generation White is the reference group. Coefficients for other groups represent the difference from this reference group. Participation = Parents' participation in school; Home Rules = Home rules about TV, homework, and grades; Helps with HW = Helps with homework when asked; Discuss = Discussion about future academic plans; Ext. Curricular = Extracurricular activities; Ext. Materials = Providing extra materials for school. The "-" represents non-significant paths that were set to be zero. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 5c. Coefficients (standard error) of Covariates and Predictors in the LGM (continued).

	Model 1	Model 2	Model 3
Slopes			
Cohort 2	-	-	-
Cohort3	-	-	-
School CE	**-.027*** (.005)**	**-.023*** (.006)**	**-.021*** (.006)**
School DB	**.018* (.007)**	**.019* (.007)**	**.021** (.007)**
School SP	-	-	-
School VN	**.036*** (.009)**	**.029*** (.008)**	**.030*** (.008)**
School WH	**.051*** (.008)**	**.052*** (.008)**	**.062*** (.007)**
Male	-	-	-
Mother PCG	-	-	-
Homeowner		-	-
Mother Work		-	-
Father Work		-	-
P Education		-	-
Two-Parent Household		-	-
A Year in U.S.		-	-
P Year in U.S.		-	-
A English		-	-
P English		**-.002* (.001)**	**-.002** (.001)**
Participation			-
Home Rules			-
Helps with HW			-
Discuss			**-.012* (.005)**
Ext. Curricular			-
Ext. Materials			-
Parental Monitoring			-
Parental Sacrifice			-

Note: 3^{rd+} Generation White is the reference group. Coefficients for other groups represent the difference from this reference group. Participation = Parents' participation in school; Home Rules = Home rules about TV, homework, and grades; Helps with HW = Helps with homework when asked; Discuss = Discussion about future academic plans; Ext. Curricular = Extracurricular activities; Ext. Materials = Providing extra materials for school. The "-" represents non-significant paths that were set to be zero. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 6. Intercept, Slope, and Class Size of Identified Trajectory Classes.

	Class 1			Class 2			Class 3			Class 4		
	Intercept	**Slope**	**n (%)**	**Intercept**	**Slope**	**n (%)**	**Intercept**	**Slope**	**n (%)**	**Intercept**	**Slope**	**n (%)**
3rd+ Generation White	**3.556** ***	**-.010** *	343 (45.4)	**2.732** ***	-0.010	285 (37.7)	**1.738** ***	-0.017	127 (16.8)			
1st Generation Chinese	**3.852** ***	**-.018** ***	126 (45.7)	**3.366** ***	**-0.039** ***	109 (39.5)	**2.797** ***	**-0.114** ***	41 (14.9)			
2nd Generation Chinese	**3.785** ***	**-.018** ***	224 (47.2)	**3.294** ***	**-0.040** ***	183 (38.5)	**2.431** ***	**-0.035** *	68 (14.3)			
1st Generation Korean	**3.714** ***	**-.036** ***	104 (47.5)	**3.177** ***	**-0.074** ***	86 (39.3)	**2.409** ***	**-0.162** ***	29 (13.2)			
2nd Generation Korean	**3.599** ***	**-.017** **	211 (43.1)	**3.002** ***	**-0.042** **	189 (38.7)	**2.001** ***	-0.045 †	86 (18.2)			
1st Generation Filipino	**3.551** ***	**-.038** ***	67 (43.2)	**2.878** ***	**-0.061** **	57 (36.8)	**1.768** ***	0.028	31 (20.0)			
2nd Generation Filipino	**3.487** ***	-.009	114 (43.0)	**2.852** ***	-0.020 †	105 (39.6)	**2.015** ***	-0.021	46 (17.4)			
1st & 2nd Generation Mexican	**3.175** ***	.015	145 (23.8)	**2.273** ***	0.002	262 (43.1)	**1.086** ***	**0.088** ***	201 (33.1)			
1st & 2nd Generation White	**3.666** ***	-.014 †	66 (31.1)	**2.875** ***	0.005	72 (34.0)	**2.134** ***	0.002	55 (25.9)	**1.120** ***	0.026	19 (9.0)

Note: *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 7a. Coefficients and Odds Ratio in the Multinomial Logistic Regression.

	Trajectory Class	b (*SE*)	Odds Ratio (95% CI)
3rd+ Generation White			
Demographic Only			-
Female	**Middle**	**-.553** (.168)**	**.575 (.414-.800)**
Female	**Low**	**-1.001*** (.231)**	**.367 (.234-.578)**
Financial and Human			
Female	**Middle**	**-.743*** (.199)**	**.475 (.322-.702)**
Female	**Low**	**-1.414*** (.321)**	**.243 (.130-.456)**
Homeowner	**Middle**	**.570* (.272)**	**1.768 (1.036-3.015)**
Homeowner	**Low**	**1.530*** (.347)**	**4.617 (2.338-9.116)**
Two-Parent Household	**Middle**	**.730** (.243)**	**2.074 (1.287-3.342)**
Two-Parent Household	**Low**	**1.627*** (.331)**	**5.087 (2.658-9.737)**
Mother Work	**Middle**	**-.624** (.237)**	**.536 (.337-.853)**
Social			-
Female	**Middle**	**-.656** (.212)**	**.519 (.343-.786)**
Female	**Low**	**-1.429*** (.326)**	**.240 (.126-.454)**
Homeowner	**Low**	**1.343*** (.355)**	**3.829 (1.909-7.683)**
Two-Parent Household	**Low**	**1.527*** (.334)**	**4.602 (2.393-8.849)**
Mother Work	**Middle**	**-.523* (.244)**	**.593 (.367-.957)**
1st Generation Chinese			
Demographic Only			-
Female	**Low**	**-1.379*** (.407)**	**.252 (.113-.559)**
Financial and Human			
Mother Work	**Middle**	**-1.237** (.454)**	**.290 (.119-.707)**
Parent Education	**Middle**	**-.619** (.199)**	**.538 (.365-.796)**
A English	**Low**	**-1.371** (.480)**	**.254 (.099-.651)**
Social			-
Father Work	**Middle**	**-.656** (.212)**	**.519 (.343-786)**
A English	**Low**	**-.905** (.344)**	**.404 (.206-.795)**
Parental Monitoring	**Middle**	**-1.971** (.583)**	**.139 (.044-.436)**

Note: Coefficients represent the effects of being in the specified trajectory classes compared to being in the high achieving class. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 7b. Coefficients and Odds Ratio in the Multinomial Logistic Regression (continued).

	Trajectory Class	b (*SE*)	Odds Ratio (95% CI)
2nd Generation Chinese			
Demographic Only			-
Female	**Middle**	**-.720** (.210)**	**.487 (.323-.734)**
Female	**Low**	**-1.327*** (.309)**	**.265 (.145-.486)**
Mother PCG	**Middle**	**.658** (.280)**	**1.932 (1.116-3.345)**
Mother PCG	**Low**	**.885** (.366)**	**2.424 (1.182-4.971)**
Financial and Human			
Female	**Low**	**-1.245** (.455)**	**.288 (.118-.703)**
Social			
Female	**Middle**	**-.721** (.245)**	**.486 (.301-.785)**
Female	**Low**	**-1.105** (.373)**	**.331 (.159-.688)**
Home Rules	**Middle**	.763† (.413)	2.144 (.955-4.814)
Home Rules	**Low**	**1.400** (.649)**	**4.055 (1.136-14.475)**
Parental Sacrifice	**Middle**	**-.622** (.234)**	**.537 (.339-.849)**
Parental Sacrifice	**Low**	**-.983** (.307)**	**.374 (.205-.682)**
1st Generation Korean			
Social			-
Parental Monitoring	**Low**	**-2.437** (.791)**	**.087 (.019-.412)**
2nd Generation Korean			
Demographic Only			-
Female	**Middle**	**-.965*** (.216)**	**.381 (.250-.581)**
Female	**Low**	**-1.201*** (.279)**	**.301 (.174-.520)**
Financial and Human			
Female	**Middle**	**-.594** (.271)**	**.552 (.325-.939)**
Female	**Low**	**-1.028** (.388)**	**.358 (.167-.765)**
Parent Education	**Middle**	**.292** (.139)**	**1.339 (1.020-1.756)**
Social			
Female	**Middle**	**-.938*** (.264)**	**.392 (.233-.658)**
Female	**Low**	**-1.316*** (.368)**	**.268 (.130-.551)**

Note: Coefficients represent the effects of being in the specified trajectory classes compared to being in the high achieving class. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Table 7c. Coefficients and Odds Ratio in the Multinomial Logistic Regression (continued).

	Trajectory Class	b (*SE*)		Odds Ratio (95% CI)
1st Generation Filipino				
		N/A		
2nd Generation Filipino				-
Demographic Only				
Female	**Middle**	**-.569***	**(.287)**	**.566 (.323-.993)**
Female	**Low**	**-1.061****	**(.402)**	**.346 (.157-.761)**
1st and 2nd Generation Mexican				
Demographic Only				
Female	**Middle**	**-.442***	**(.222)**	**.642 (.416-.992)**
Female	**Low**	**-.550***	**(.232)**	**.577 (.366-.909)**
Financial and Human				
Two-Parent Household	**Middle**	-1.305†	(.718)	.271 (.066-1.107)
Two-Parent Household	**Low**	-1.940†	(1.017)	.144 (.020-1.055)
Homeowner	**Low**	**2.248***	**(.934)**	**9.472 (1.518-59.087)**
Parent Education	**Low**	**-.844***	**(.361)**	**.430 (.212-.872)**
Social				-
Homeowner	**Middle**	**.741***	**(.311)**	**2.099 (1.141-3.860)**
Homeowner	**Low**	**1.267*****	**(.359)**	**3.551 (1.755-7.183)**
1st and 2nd Generation White				
Financial and Human				
Father Work	**3rd Highest**	**-3.569***	**(1.685)**	**.028 (.001-.766)**

Note: Coefficients represent the effects of being in the specified trajectory classes compared to being in the high achieving class. *** $p<.001$, ** $p<.01$, * $p<.05$, † $p<.10$.

Figure 1a. Unconditional Latent Growth Model for Four Repeated Measures.

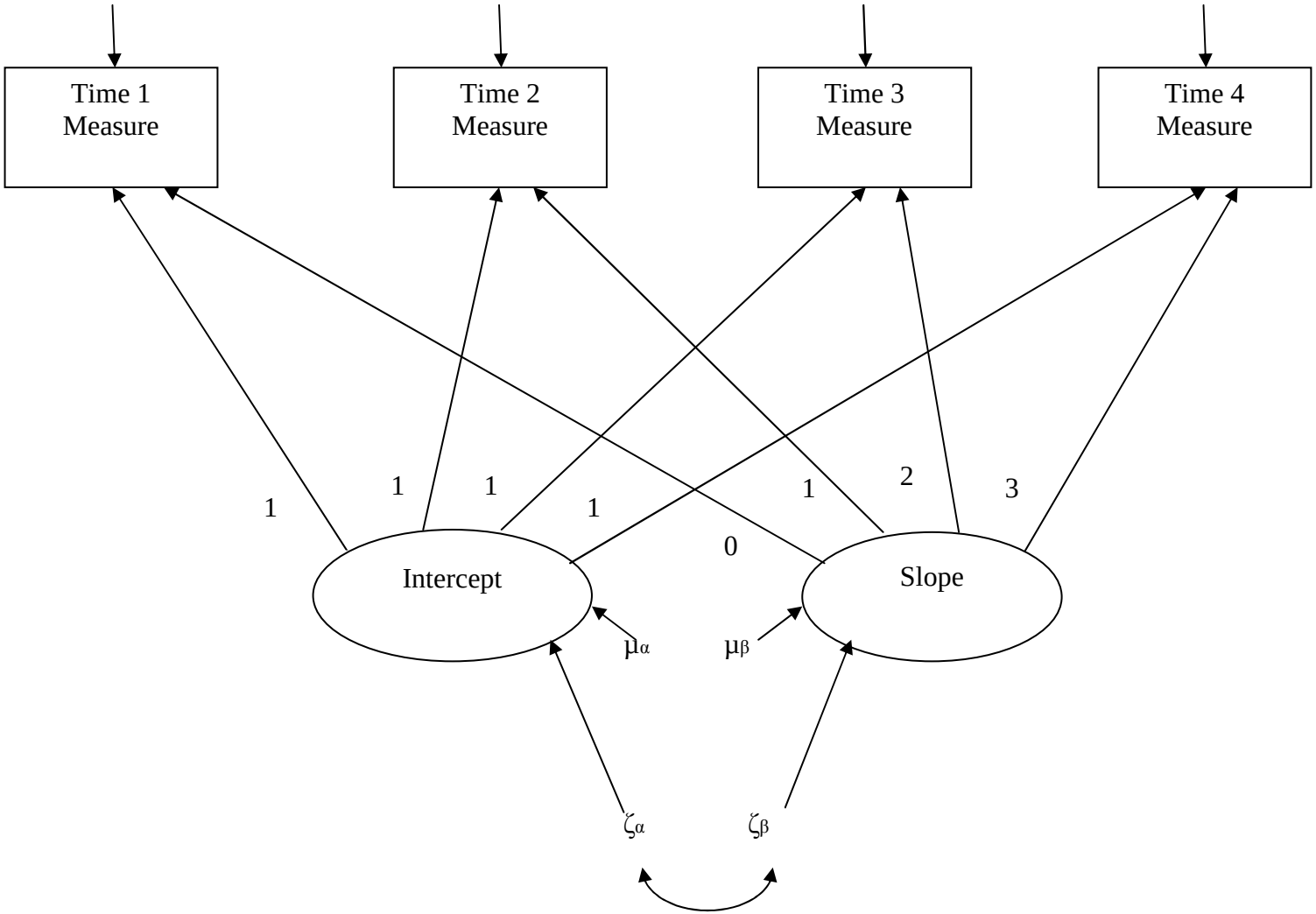


Figure 1b. Conditional Latent Growth Model for Four Repeated Measures with Two Predictors.

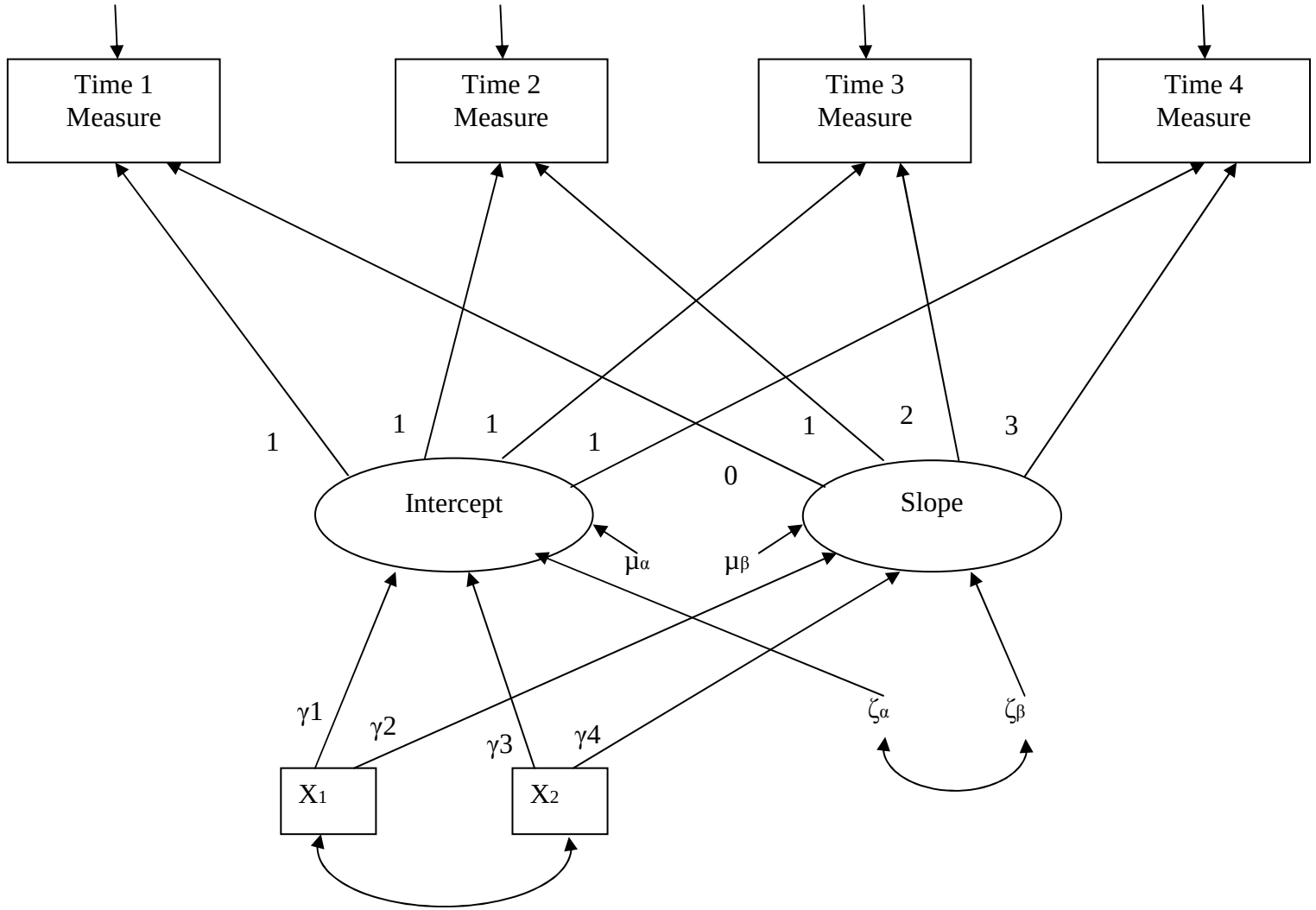


Figure 2a. Academic Trajectories of the Ethnic-Generational Groups in the Base Model.

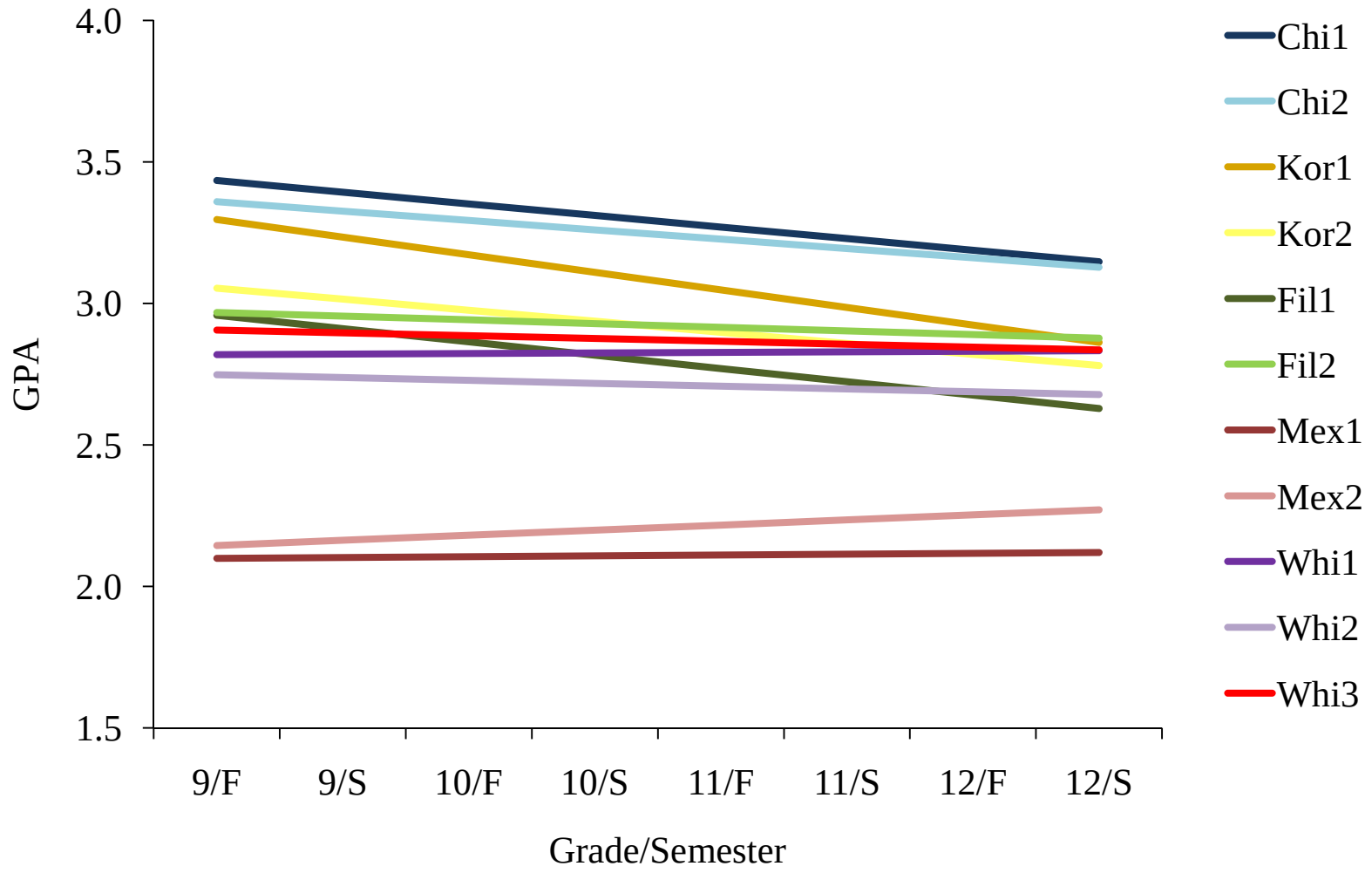


Figure 2b. Academic Trajectories of the Ethnic-Generational Groups in the Financial and Human Capital Model.

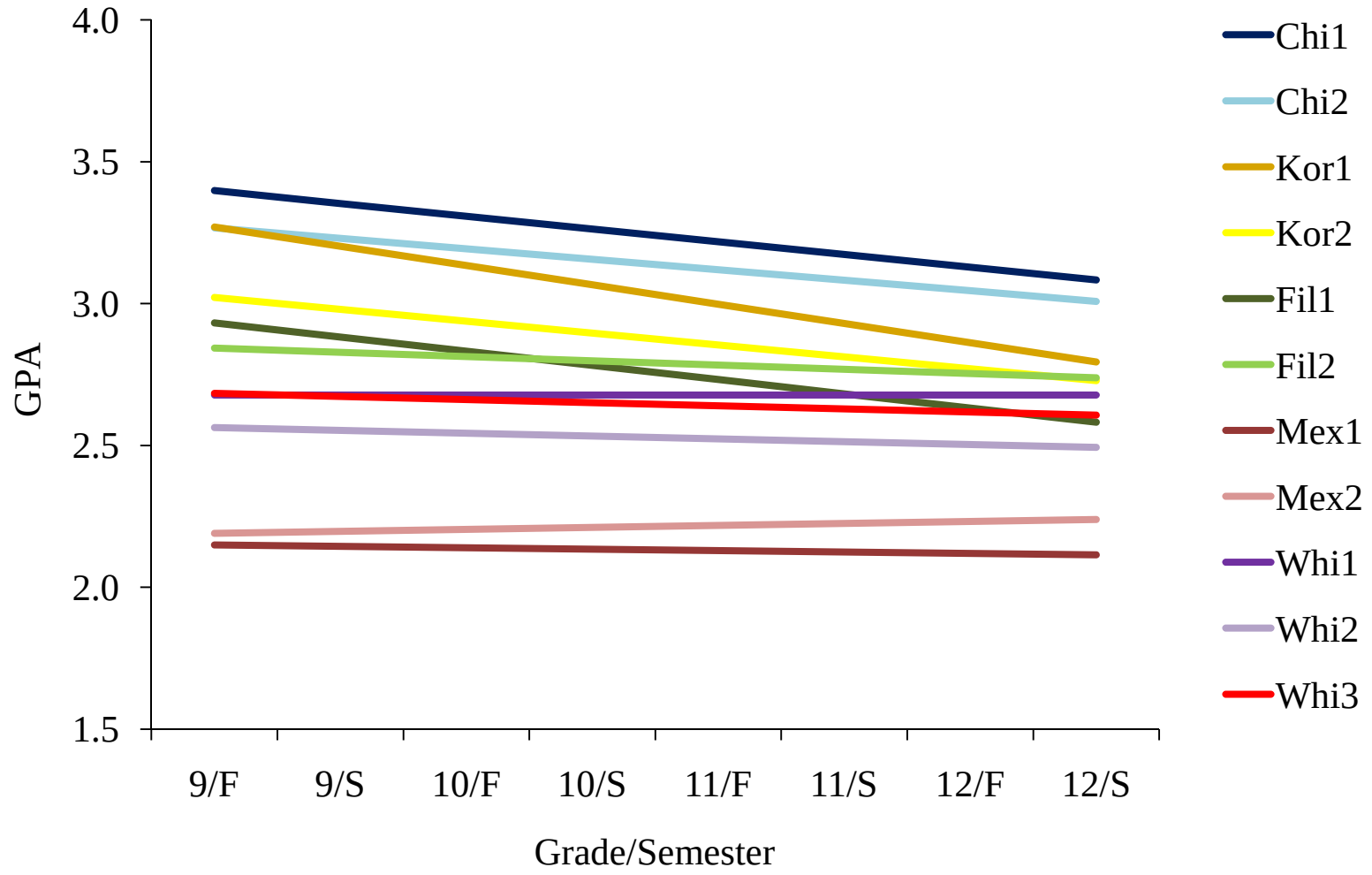


Figure 2c. Academic Trajectories of the Ethnic-Generational Groups in the Social Capital Model.

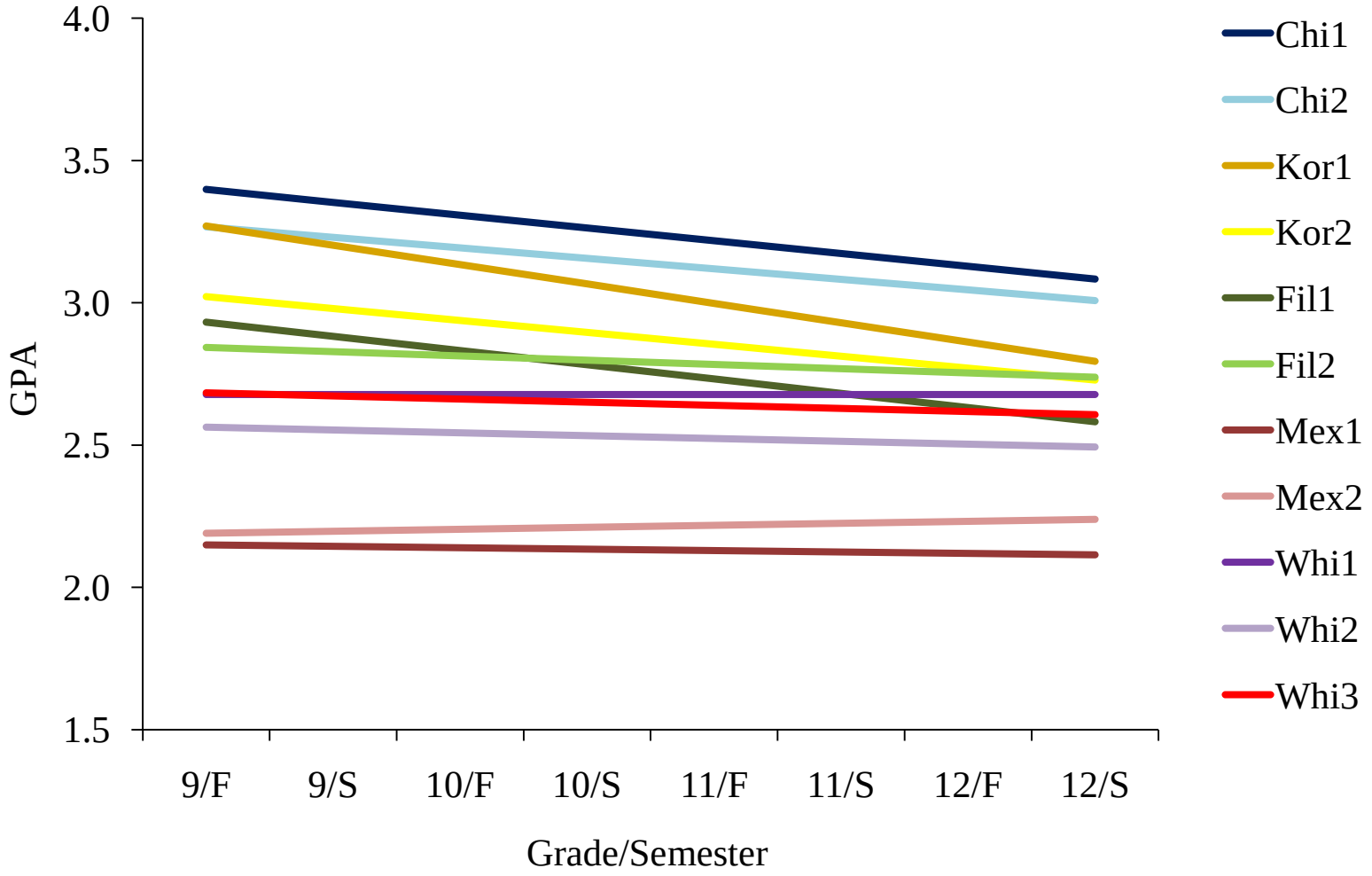


Figure 3a. Academic Trajectories of First- and Second-Generation Chinese Youth.

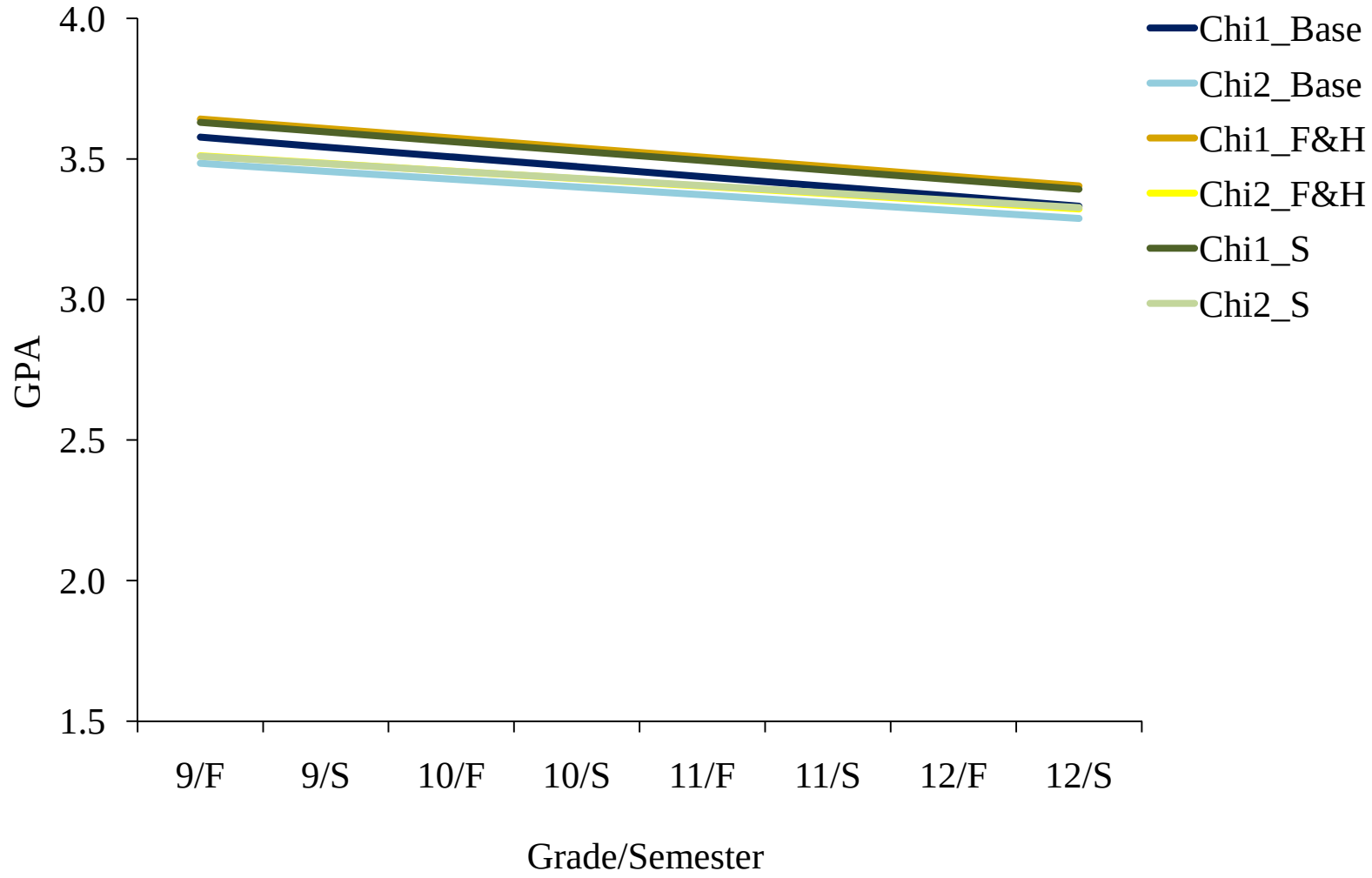


Figure 3b. Academic Trajectories of First- and Second-Generation Korean Youth.

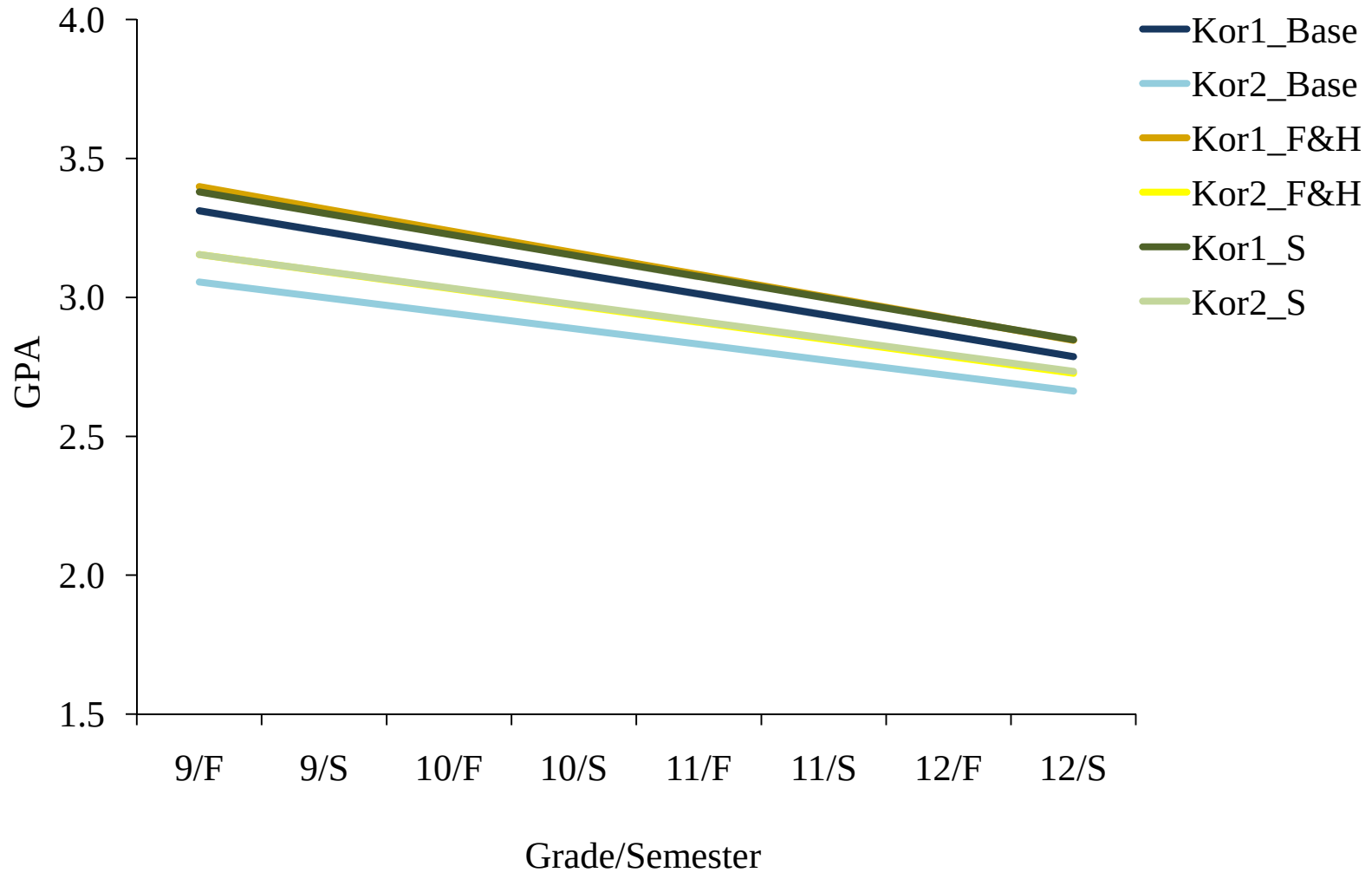
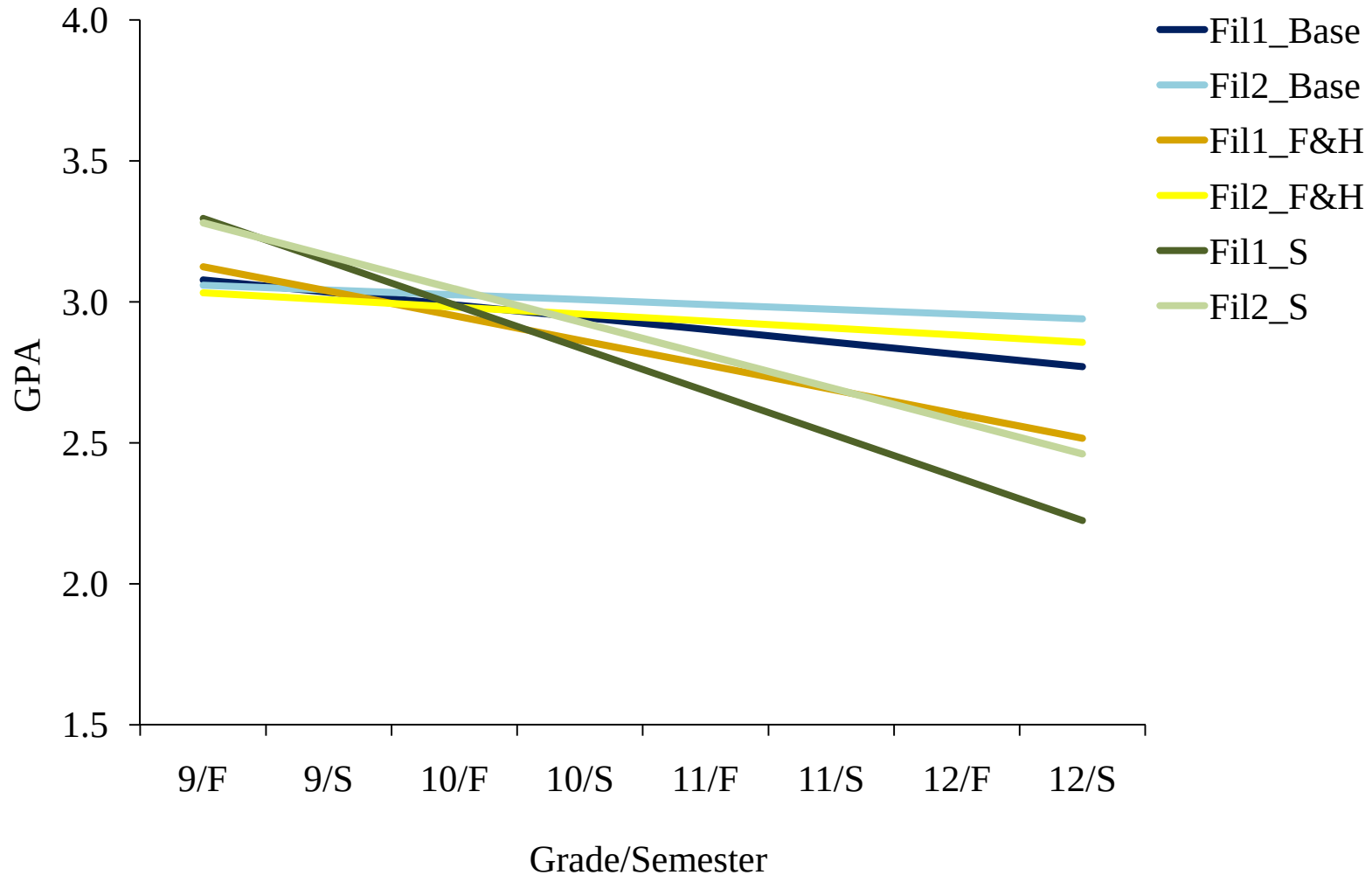


Figure 3c. Academic Trajectories of First- and Second-Generation Filipino Youth.



Appendix

Social Capital

Parental Involvement in School Scale

Stem question:

Now please think about the school-related interactions you have with your parents and rate how often your parent/guardian CURRENTLY (*during THIS SCHOOL YEAR*) does the following things. *Please answer the following for the parent you circled earlier as your primary caregiver*.

My parent…..

Rating scale:

1. Never; 2. Rarely; 3. Sometimes; 4. Often

1. Talks to me about my high school plans.
2. Talks to me about plans after I graduate from high school.
3. Visits the school for special events.
4. Attends PTO/PTA meetings.
5. Volunteers at my school.
6. Watches me in sports or other extracurricular activities.
7. Talks to my teacher about how I am doing.
8. Helps me with homework when I ask.
9. Makes sure I do my homework.
10. Checks over my homework.
11. Purchases extra books or other materials for my schooling or education.
12. Assigns me extra work beyond what the teacher assigns for homework.
13. Has talked to me about what college I should attend.
14. Has talked to me about what my college major should be.
15. Talks to me about my plans for college.
16. Has talked to me about what career I should pursue.

Does your parent…..

Rating scale:

1. Yes; 0. No

17. Have rules about how late or how many hours you can watch TV?
18. Have rules about maintaining good grades?
19. Have rules about doing homework?
20. Pay for classes to help improve tour Scholastic Aptitude Test (SAT) scores?
21. Involve you in after-school study programs or tutoring?
22. Enroll you in music classes outside of school?

Parental Monitoring Scale

Stem question:

How much does your parent TRY to know…

Rating scale:

1. Doesn't try; 2. Tries a little; 3. Tries a lot

1. Who your friends are?
2. Where you go at night?
3. How you spend your money?
4. What you do with your free time?
5. Where you are most afternoons after school?

Parental Sacrifice Scale

Rating scale:

1. Strongly disagree; 2. Disagree; 3. Agree somewhat; 4. Agree; 5. Strongly Agree

1. My parent has made sacrifices to give me a better life.
2. My parent works hard to assure I have the best opportunities.
3. My parent has really tried hard to give me opportunities that s/he did not have.
4. My parent has faced great challenges to get where s/he is.
5. I am grateful to my parent for everything s/he has tried to do for me.
6. I feel I owe a lot to my parent for everything s/he has tried to do for me.