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The Relationship Between Parental Involvement and High School
Graduation Among Different Ethnicity Groups

A Thesis submitted in partial satisfaction
of the requirements for the degree of

Master of Arts

in

Education

by

Jing Xu

September 2012

Thesis Committee:

Dr. Gregory J. Palardy, Chairperson
Dr. Lee H. Swanson
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The Thesis of Jing Xu is approved

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ABSTRACT OF THE THESIS

The Relationship Between Parental Involvement and High School Graduation Among Different Ethnicity Groups

by

Jing Xu

Master of Arts, Graduate Program in Education
University of California, Riverside, September 2012
Dr. Gregory J. Palardy, Chairperson

This study examines ethnic differences in the effects of multiple types of parental involvement (PI) on high school graduation. PI is theorized to include four distinct dimensions: parent-child communication, school involvement, home supervision, and aspiration. These four dimensions can be broken into a total of 10 sub-dimensions. Factor analysis is used to construct latent variables representing the sub-dimensions, which are subsequently included in a logistic regression model with graduating vs. not graduating as the outcomes. The model is first run on the full sample of students and then on each of four ethnic groups to examine for ethnic differences in the effects.

The results show that mean levels of PI differ across ethnic groups for all ten sub-dimensions. Of the ethnic groups, Asian parents tend to be least involved in discussions of schooling progress and in providing advice on schooling, while White parents help with homework least. Asian and Hispanic parents tend to contact the school and participate in school activities less than White or Black parents. Moreover, Black parents tend to set more rules, while Asian parents set limits and privileges based on children's performance most.

The effect of PI on graduation also differs across ethnic groups. Parent participation in

school activities impacts graduation positively among all ethnic groups. Asian children benefit most from parents' participation in school activities and Black children benefit least from it. However, while most other PI dimensions are significantly associated with graduation for White students, which is not the case for ethnic minorities.

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Introduction

Parental involvement (PI) is an important topic in education because it can influence children's development and educational outcomes. A large body of research supports the crucial role of PI in educational settings. PI has been found to be associated with student academic achievements (Christenson, Rounds & Gorney, 1992; Keith, 1991), as well as dropout and graduation rates (Perna & Titus, 2005; Rumberger, 2011). As a result, PI has received much attention among practitioners, researchers, and policy makers. For example, the Goals 2000: Educate America Act states that the local agency and school shall assist parents and inform them of the benefits of PI, and introduce PI programs to them.

A review of the research literature on the effects of PI indicates that there is disagreement regarding its association with student outcomes, with some research indicating that it matters and other research that it does not matter. Two explanations for this disagreement are: (1) PI is defined in different ways in the literature, which can impact its association with student achievement and other outcomes (Fan & Chen, 2001); (2) there tend to be ethnic differences in the effects of PI, which many studies fail to take into account (Mattingly et al., 2002; Park & Palardy, 2004).

Another shortcoming of the research literature is that the vast majority of the studies on PI examine its association with achievement or behavioral outcomes, but rarely graduation rates. However, because the high school graduation rate is considered a barometer of the health of American society by some researchers and policy makers, it

too is an important outcome to consider. Graduation rates have long been tracked and after years of decline seem to have improved in recent years. Archival data suggests the graduation rate peaked at 77 percent in 1969 and then slowly declined until 2002 (Heckman & LaFontaine, 2007). In 2008, about 72 percent of public high school students graduate on time, which is a 6 percent-point increase from 1997. Given that high school graduation is a gateway to higher education and a minimum requirement for many employment opportunities, and given that there are ethnic differences in graduation rates, graduation rate continues to be a concern for policy makers and practitioners (Rumberger, 2011).

The Current Study

The current study analyzes a nationally representative sample of 2002 tenth graders from the Educational Longitudinal Study of 2002 (NCES, 2002) to address some of the shortcomings in the literature on PI. First, with guidance from the literature, the study conceptualizes and develops measures of different dimensions of PI using factor analysis. Second, the study examines ethnic differences in the level of PI using Analysis of variance. Third, the study examines ethnic differences in the associations between PI and high school graduation using logistic regression.

The following research questions will be addressed:

- (1) What sub-dimensions of PI can be identified from items in ELS: 2002 data?
- (2) Does the level of parental involvement differ across ethnic groups?

(3) What is the association between parental involvement and high school graduation and does it differ across ethnic groups?

Literature Review

Linkage between Parental Involvement and Student Academic Behavior

The relationship between PI and students' academic achievement drew much attention in United States because it is a conviction of many of policymakers, scholars and educators that PI plays a crucial role in students' academic success. However, a review of the previous research indicates inconsistent outcomes of PI in students' academic achievements. A wealth of research supports the idea that PI leads to improved educational achievement at both elementary and secondary levels (Epstein et al., 2002; NMSA, 2003; Fan & Chen, 2001; NCES, 1997), while some research indicated a weak or even negative correlation between PI and academic achievement (Natriello, 1989; Hill et al. 2004).

The previous research indicates a number of ways PI impacts academic achievements. Many studies also support the idea that PI impacts other educational outcomes such as graduation, dropout, and college enrollment. Students with more involved parents are reported to have decreased dropout rates (Epstein & Sheldon, 2002; Rumberger, 1995) and less grade retention (Miedel & Reynolds, 1999); the quality and amount of PI also impacts high school completion (Astone & McLanahan, 1991). Rumberger (1990) concluded that the causes of dropout can be categorized as: demographic, school related, family related, and individual. Among these factors, the

influence of family and PI was the most important one. However, although various studies support the importance of PI on children's performance in school, that research has typically not provided much guidance regarding the extent to which particular forms of PI are most important (Jeynes, 2001). The current study will compare the importance of different dimensions of PI to high school graduation.

Conceptualization of Parental Involvement

According to National Middle School Association (2006), PI is defined as having an awareness of and involvement in schoolwork, understanding of the interaction between parenting skills and student success in schooling, and a commitment to consistent communication with educators about student progress. However, review of multiple research studies reveals various operational definitions of PI. This incongruity in definition was regarded by some researchers as one explanation of inconsistent findings about the effect of PI on student academic achievement. Meta-analysis by Fan and Chen (2001) and Hoover-Dempsey (2001) reported a chaotic state in the operational definition of PI in previous studies. Some researchers may consider PI as a single dimension, such as parental aspiration (Bloom, 1980); parents participate in school activities (Stevenson & Baker, 1987) and parental home supervision (Keith et al., 1993). Meanwhile, some researchers suggest the word "involvement" is suggestive of behaviors or practices rather than attitude. Yet, a vast array of either have been examined. For that reason many researchers have suggested PI to be more appropriately conceptualized multi-dimensionally (Walker et al., 2005; Epstein & Dauber 1991, 1995).

Epstein, et al. (2002) developed a framework of six types of involvement PI for the middle grades: (1) Parenting; (2) Communicating; (3) Volunteering; (4) Learning at home; (5) Decision making; (6) Collaborating with community. To describe the involvement more clearly she lists sample practices and activities, challenges of each involvement types, and expected results. Thus, Epstein's framework assists parents in developing program of constructive involvement as well as improvement in specific practices.

Another example of the multi-dimensional nature of PI in the literature is the study of Fan (2001), who identified seven types of PI, including television rules, parent-child communication, school contacts, parent-teacher association, volunteering, home supervision, and educational aspiration. While Fan's conceptualization has overlap with Epstein's, it is more focused on educational involvement. However, his conventionalization may have been limited in part by the data he was using to measure it, as it is based on a factor analysis of items from the National Educational Longitudinal Study of 1988 (NELS:88).

Considering the multiples dimension of PI is important because previous research suggests some forms of PI positively affect student academic achievement while others have a negative effect (Catsambis, 1998). An example is Fan (2001) found a positive effect of parental aspiration on academic performance, while parental-child communication and volunteering had little effect, and school-contact had a negative effect.

The current study extends previous research that, conceptualized PI as a form of social capital. To that end, four dimensions of PI are considered: (1) Parental aspiration, (2) Parent-child communication, (3) School involvement, (4) Home supervision. The literature on each of these dimensions is outlined below.

Parental Aspiration. Parental aspirations relate to desires, wishes or goals that parents have formed regarding their children's future attainment rather than what they realistically expect their children to achieve (Seginer, 1983). It contrasts with parental expectations, which are defined as realistic beliefs or judgments that parents have about their children's future achievement as reflected in course grades, highest level of schooling attained, or college attendance (e.g. Glick & White, 2004; Goldenberg, et al., 2001). Despite their conceptual difference, parental expectations and aspirations are sometimes used interchangeably (Yamamoto, 2010). Occasionally they were combined into a single measure for analytic purpose. Parental aspiration is regarded as the most critical construct of the PI (Fan & Chen, 2001) and significantly affects student academic performance. Various research indicates students whose parents have high aspirations achieved higher scores on standardized tests, and persisted longer in school than those parents have low ones (Davis-Kean, 2005; Vartanian et al., 2007). Generally it was measured by parents' hope of the years of schooling their children achieve.

Parent-Child Communication. This is defined as parents and children actively in conversation on education topics. It included interest in home/school work, assistance with homework, and discussion of school progress (Fan, 2001). This dimension is

important as a theoretical mechanism because it provides a channel for children to understand the importance of schooling and education through active discussion (McNeal, 1999). Children will make an effort on positive performance and reduce negative performance such as truancy when their parents show interests in their academic activities. Another aspect is, through active communication, parents get to know their children's school condition well, and they will discover signs of poor performance or dropouts in very early so as to avoid them. It is an important measure for PI and has been utilized in much research.

School Involvement: PI at the school may include attending parent-teacher meetings, participating in parent-teacher organizations (PTO) (Stevenson & Baker, 1987), parents contacting school and school contacting parents, and parents volunteering at school (Ho Sui-Chu & Willms, 1996). Coleman considered PI in the parent-teacher organization as a key mechanism in adolescent development in that it extended the parental network by sharing information. According to McNeal (1990), children view PTO as an investment from their parents and realize the importance of education, also, it extends parents' social network from those who have similar interests. So school involvement can be considered as social capital. Previous findings indicate that involvement at school is significantly associated with educational outcomes.

Home Supervision. Home supervision includes parents supervising children's time spent on TV, time spent on doing homework, home surrounding conducive to studying, and family rules on education related events and other daily habits. It was

regarded as an important element of PI in adolescents' academic development and behavior (Coleman, 1987, 1988). It can be considered as a social capital because in the supervision process, parents closely monitor their child's behavior out of concern for the child's well-being and this outward expression of concern translates into a greater investment by the child in improved educational performance and reduced negative behavior (McNeal, 2012). Generally parental supervision links to parental styles, and an authoritative parenting style was thought as the most optimal one and beneficial to student achievement (Dornbusch, 1987; Lamborn, 1991).

PI among Different Races

Review of previous studies suggests a wealth of studies failed to take race/ethnicity difference into account when investigating the impact of PI on academic achievement. However, differences in the level and effects of PI by races/ethnicity may be a possible explanation for the inconsistent findings on the relationship between PI and educational outcomes.

Researchers that take races/ethnicity into account when exploring PI and academic achievements report group differences in specific dimension of PI. For the dimension of parental expectations, Asian and Asian American parents had higher expectations than White parents (Mau, 1997). And some evidence supports that Black youths reported a higher level of parental expectations than White youth (Nilsson et al., 1999). However, Asian American parents seem to have the lowest level of school involvement both in terms of contacts with the school and participation in school

activities (Fan, 2001; Mau, 1997), compared with Hispanic, African American, and Whites. Ethnic groups also vary their level of on other dimensions of school involvement.

Besides the different levels of PI among ethnicity, research also provides evidence of differential in impacts of PI on academic achievements among ethnicity groups. A meta-analysis (Jeynes, 2012) suggests the effects of PI are greater for some groups than for others. Some types of PI benefited African Americans and Latinos more than it did Asian American. For example, Steinberg and Colleagues (1992) found school involvement was positively associated with performance for White and Hispanic students, but not for African American or Asian students. While Keith and colleagues (1998) found PI affects to be very similar among across ethnicity groups. Moreover, there is also evidence a negative association between PI and academic performance in minority groups (Desimon, 1999).

As PI was considered as social capital (which is conceptualized in following section) in current study, according to McNeal's (1999) ethnic differences in academic performance can be explained by two reasons. The first reason is that the forms of social relation, which is the structure of relationships between parents and children, parents and teacher is different across ethnic groups. Secondly, parents in across ethnic groups possess different resources due to various backgrounds which lead to PI difference.

Races and Graduation

A wealth of research reports academic achievement differences among different ethnicity groups. The rate of graduation also varies among different races / ethnicity.

Generally Asian group's graduation rate is much higher than other minority groups. Data sources also suggest that minority adolescents' graduation at substantially lower rates than Whites. According to NCES 2010, in 2007-08, across the United States, excluding South Carolina, a total of 2,965,286 public school students received a high school diploma, and resulting in an Averaged Freshman Graduation Rate (AFGR, which uses student enrollment data to estimate the size of an incoming freshman class and counts of the number of diplomas awarded four years later) of 74.9 percent. Five ethnic groups were measured in the study: American Indian/ Alaska Native, Asian/Pacific Islander, Hispanic, Black and Whites. The highest AFGR was Asian/Pacific Islander students at 91.4 percent, whereas for Whites it was 81.0 percent, and 63.5 percent for Hispanic students and 61.5 percent for Black students.

Beyond high school graduation, racial differences have been documented for college enrollment and dropout rates. According to data from the National Center for Education Statistics (NCES, 2001), only 39 percent of African American and 32 percent of Hispanic high school graduates between the ages of 18 and 24 were enrolled in college in 1999, compared with 45 percent of Whites. Although some researchers reported the college enrollment process varies across races and ethnic groups, some other researchers (Dika & Singh, 2002) have concluded that there is still little known about the relationship between PI and college enrollment as it varies by ethnicity. Thus, further research is needed to evaluate the effect of PI on college enrollment across different ethnic groups. Meanwhile, according to NCES 2010, in 2007-2008 academic years, the dropouts rate,

the lowest for Asian/Pacific Islanders for 2.4 percent, and for Whites it was 2.8 percent. The dropout rates for the Hispanic group was 6.0 percent, and for Black at 6.7 percent.

Family Socioeconomic Status and Parental Involvement

The results of many studies show the relationship between socioeconomic status (SES) and graduation is mediated by PI. Generally, parents with higher SES will assist children to more success because high SES provides more social capital that benefits academic learning. They are more likely than parents in low SES families to be involved with children's academic activities, such as parental participation with teachers and schools (Rumberger, 1990). Such involvement will improve children's academic performance (Lareau, 1987; Stevenson & Baker, 1987). Many research findings suggest that low SES parents are less likely contact school or participate in school activities when their children need help (Delgado-Gaitan, 1991).

Parental Involvement as a Form of Social Capital

Based on a review of the most widely accepted definitions of social capital (including Coleman's and Bourdieu's, etc), McNeal (1999) suggested there are at least three distinct elements that must be addressed when conceptualizing social capital: form, norms of obligation and reciprocity, and resources. Form means the structure of social ties and relations; generally it describes the relations' nature, breadth, and intensity of a relationship. Norms of obligation and reciprocity 'entail sense of investment with the expectation of a return on that investment owing to a sense of trust, obligation, or norm of reciprocity' (McNeal, 1999). Resources can be infused within the network as well as be

acquired through external linkages. PI can be regarded as a social capital based on this framework by fulfilling all elements of social capital. Firstly, it satisfies the element 'form' by exhibiting a dyadic relation between parents and children, teacher and other parents. This dyadic relation constitutes the form of the parents' social network they involved in their children's education, and thus provides social capital to each individual. To the extent of 'norms of obligation and reciprocity', kinship plays a crucial role in this dimension. Investigating children's education and development is a social norm for parents to obey. If parents fail to carry out the obligation of taking care of children, they may lose many social ties as a result of violating social norms as well as imprisonment. Finally, PI also fits the dimension of resources of social capital. In the network, parents own different levels of capitals in the process of investing children, such as physical capital and cultural capital. Parents' social class is also a potential capital for their children.

Coleman's (1988) and Bourdieu's (1977) definitions of social capital are the most widely used in education. The current study cited Bourdieu's definitions of social capital as theoretical frameworks for investigating the PI as a social capital that provides students resources that benefit high school graduation.

Bourdieu developed the concept of social and culture reproduction, which was a widely accepted theory in sociology and education in 1977 to explain the difference in achievement levels. In his opinion, the education system is a "field" with various social relations that influence individual perspective and decision-making. It is like a market

where different individuals compete for social and cultural capital, which is the access to resources. He explains some individuals have advantage over others because of their membership in some particular groups (Portes, 1998). The size of their networks and the amount of resources such as economic, cultural, and social capital one possess in the network determined how much social capital an individual could gain through social networks and relationships. In educational settings, the social networks parents are embedded in mold their understanding and perspective on their accountability and guidance for their children's academic learning.

Large numbers of children's behavior is based on dispositions shaped by their parents' access to social capital. Generally, parents possess more social capital will increase their children's success compared to parents with less social capital. For example, parents with more access to resources tend to provide more effective advice on academic learning and feels more actively participate in parent-teacher activities. According to Rumbaut (2005), parent with less social capital will have less chance to participate in children's academic life; and that's lead to children's lower academic achievement.

Conceptual Framework Guiding the Present Study

The conceptual framework guiding the present study is informed by the research literature reviewed above. Ten sub-dimensions of PI based on four general dimensions contribute to the likelihood of graduating from high school (see Figure 1). Among them, four sub-dimensions (discussion on school progress, advice on schooling, help with

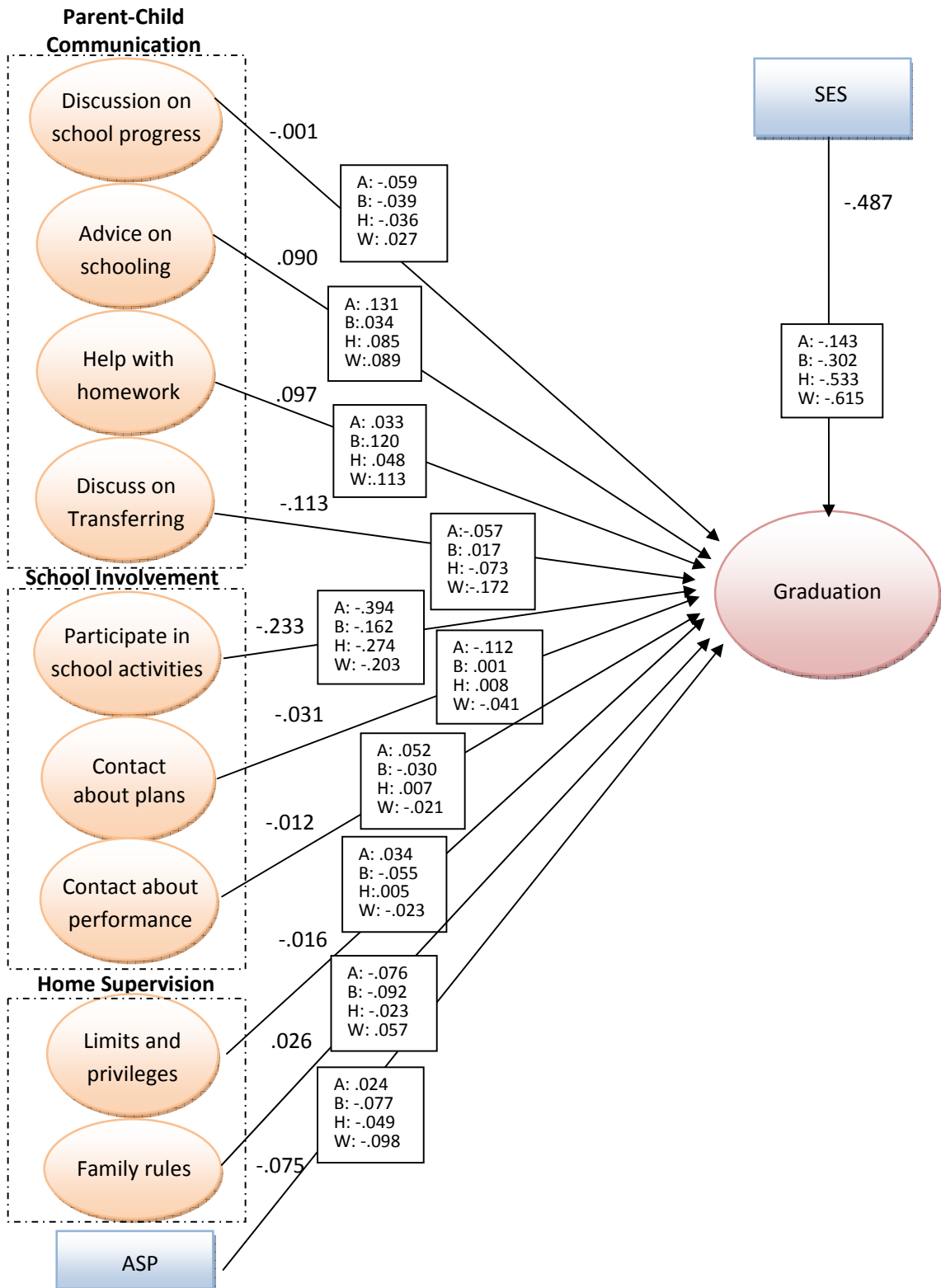
homework, and discussion on transferring) belong to 'Parent-Child Communication'; three sub-dimensions (participation in school activities, contacting school about academic plans, contacting school about performance) are included in 'School Involvement', and two sub-dimensions (setting family rules and setting limits and privileges based on performance) are included in 'Home Supervision', and the last form is parents' aspiration for their children. Socioeconomic status is also a predictor of high school graduation. According to previous research, it is a mediator of PI and graduation because the level of SES also impacts the quality of PI. However, in the current study, it is not considered due to the limitation of the software utilized. Four ethnic groups are investigated in the study, they are: Asian, Black, Hispanic and White.

Method

Data

The data used in this study were obtained from the ELS: 2002 dataset (NCES, 2002). ELS is a nationally representative longitudinal study that tracks students as they transition from high school and into postsecondary education or careers. The sample is a cohort of 2002 sophomores who were followed at 2-year intervals to obtain relevant data about educational progress, attitudes, and outcomes. In the spring term 2002 base year of the study, over 15,000 high school sophomores and their parents, teachers, and principals who were members of 752 public and private high schools were surveyed. The first follow-up (2004) resurveyed students who remain in their base-year schools along with a freshening sample. ELS contains various measures for investigating multiple types of

Figure 1
Conceptual Framework of Parental Involvement and HS Graduation



PI, and as a longitudinal design, it is well suited for examining the intricate relationships between PI and student academic outcomes (McNeal, 2012).

This study uses PI data from the base year of ELS to examine its association with graduation. Tenth grade PI data are used because it directly precedes the expected high school graduation and therefore may have a causal influence.

Variables Measured

In the current study, variables measuring PI and graduation in the ELS: 2002 dataset are used for analysis. In total 45 items are included to measure four dimensions of PI. The first dimension “*Parental Expectation*” is measured by item BYPARASP (How far expect children to go), which is 7-point response scale ranging from 1 (Less than high school level) to 7 (Obtain PhD). Forty three point seven percent parents expect their children to graduate from college (5-point) which is the most frequent, and 0.1 percent parent expected the lowest level of children’s academic achievement.

The *Parent-Child Communication* dimension consists of two levels, the parent level obtained from a parent questionnaire and the student level from a student questionnaire. The parent level included 11 items, ranging from checking homework to providing advice about school activities; items Homework related items (BYS85A, BY85B, BYP55A) are 4-point response scales from never(1) to often(4). Other items are 3-point response scales ranging from never (1) to often (3). The student level included 10 items about how often children discuss with parents, examples of content of discussions

are: courses, activities, ACT/SAT, transfer, etc. All the items are 3-point response scales ranging from never (1) to often (3).

The *School-based involvement* dimension includes 14 items ranging from school contact and school activity participation. Items related to parents contacting school are on a 4-point response scale, ranging from ‘none’ (1) to ‘more than four times’ (4). And items related to school organization participation measured in a dichotomous response scheme (0 = no, 1 = yes). The *Home supervision* dimension includes eight items related to family rules and family privileges based on performance, and all the items are measured in a dichotomous response scheme (0 = no, 1 = yes). Family socioeconomic status (SES) is evaluated based on the item “BYSES1” in the dataset, which was measured according to five equally weighted, standardized components: father/ guardian education, mother/ guardian education, family income, father/guardian occupation, mother/guardian occupation. Based on students’ reports of their ethnicity, five categories of ethnic groups were developed: Asian, Black, Hispanic, White and Others. The largest sample is Whites with 8,735 students and the smallest is Asian with 1,465 students.

The dependent variable measured in the current research is Graduation. Students graduating pre fall of 2003 and between the fall of 2003 and the summer of 2004 are categorized as graduates, whereas the remaining categories, “post-summer 2004 graduate”, “received certificate of attendance”, “received GED or other equivalency” and “still enrolled in high school”, are categorized as non-graduate.

A summary of the descriptive statistics of PI items is reported in Table 1.

Table 1**Means and SD of Parental involvement variables**

Parental Involvement	Asian (n=1465)		Black (n=2027)		Hispanic (n=2227)		White (n=8735)		Others (n=1798)	
N	Mean	STD	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Parental Aspiration										
How far expected to go	5.70	1.15	5.63	1.30	5.42	1.38	5.28	1.23	5.34	1.26
Parent-child communication										
Parent level										
Check homework	2.74	1.00	2.89	0.90	2.83	0.92	2.85	1.01	2.80	0.69
help with homework	2.21	0.87	2.51	0.87	2.45	0.86	2.52	0.87	2.45	0.61
advice about selecting courses	2.26	0.56	2.43	0.57	2.36	0.63	2.41	0.58	2.42	0.42
advice about plans for college	2.17	0.63	2.25	0.65	2.07	0.72	2.11	0.68	2.13	0.49
advice about applying	2.15	0.64	2.21	0.66	2.10	0.73	2.09	0.70	2.11	0.51
advice about jobs	2.01	0.63	2.22	0.66	2.11	0.71	2.17	0.65	2.14	0.48
advice about community	2.11	0.62	2.21	0.65	2.06	0.73	2.37	0.60	2.27	0.47
advice about troubling	2.35	0.64	2.64	0.50	2.48	0.67	2.66	0.48	2.61	0.38
Check homework	2.86	0.84	3.11	0.78	3.04	0.86	2.88	0.86	2.97	0.59
discuss report card	3.57	0.70	3.82	0.43	3.79	0.48	3.85	0.39	3.80	0.37
work on homework	2.76	0.86	3.03	0.75	2.87	0.91	2.91	0.77	2.91	0.58
Student Level										
discuss courses	2.07	0.64	2.09	0.60	2.01	0.60	2.13	0.63	2.06	0.44
discuss activities	2.07	0.66	2.19	0.61	2.08	0.64	2.23	0.66	2.16	0.46
discuss class	1.97	0.63	2.10	0.57	2.05	0.59	2.13	0.62	2.07	0.41

(To be continued)

discuss grades	2.38	0.58	2.43	0.55	2.38	0.57	2.44	0.57	2.40	0.40
discuss transfer	1.35	0.54	1.50	0.60	1.39	0.55	1.32	0.54	1.37	0.40
discuss ACT/SAT	1.88	0.69	1.87	0.65	1.71	0.62	1.73	0.66	1.73	0.45
discuss college	2.37	0.60	2.41	0.56	2.34	0.60	2.33	0.62	2.33	0.42
discuss events	1.87	0.64	1.87	0.62	1.84	0.65	1.99	0.67	1.93	0.46
discuss troubling thing	1.87	0.63	2.03	0.60	2.03	0.63	2.06	0.62	2.01	0.44
discuss poor performance	1.31	0.53	1.53	0.75	1.54	0.77	1.42	0.71	1.51	0.59
School involvement										
contact school about program	0.56	0.48	0.68	0.44	0.66	0.46	0.79	0.40	0.70	0.32
contact about plans after	0.48	0.47	0.56	0.46	0.52	0.48	0.65	0.46	0.58	0.33
contact about course selection	0.40	0.45	0.51	0.45	0.46	0.46	0.57	0.47	0.51	0.33
contact about poor attendance	2.43	1.01	2.11	1.00	2.18	0.95	2.15	0.98	2.15	0.68
contact about problem behavior	2.87	0.94	2.79	0.94	2.77	0.94	2.79	0.97	2.77	0.68
contact about positive behavior	1.37	0.52	1.54	0.64	1.43	0.60	1.49	0.63	1.52	0.48
contact about fundraising	1.20	0.41	1.28	0.51	1.24	0.50	1.24	0.47	1.27	0.39
contact about homework	1.27	0.44	1.34	0.53	1.27	0.49	1.32	0.50	1.33	0.40
contact about information for records	1.16	0.46	1.22	0.55	1.31	0.67	1.14	0.44	1.21	0.41
belong to P-T organization	1.11	0.33	1.23	0.56	1.19	0.49	1.13	0.41	1.18	0.38
P-T meetings	1.22	0.49	1.34	0.62	1.31	0.62	1.22	0.50	1.27	0.41
attend school activities	2.64	0.96	2.89	0.95	2.64	1.07	3.10	0.95	2.91	0.73
P-T organization	1.35	0.56	1.41	0.65	1.36	0.66	1.53	0.80	1.46	0.52
volunteer at school	1.29	0.49	1.48	0.69	1.42	0.68	1.42	0.67	1.45	0.50

(To be continued)

bother organization with parents	1.35	0.46	1.49	0.56	1.43	0.54	1.46	0.54	1.47	0.37
Home supervision										
Limit TV time	0.22	0.33	0.25	0.35	0.19	0.34	0.37	0.45	0.29	0.28
Limit time with friend	0.24	0.35	0.25	0.36	0.17	0.32	0.30	0.42	0.26	0.28
make curfews	3.29	1.01	3.72	0.64	3.67	0.73	3.80	0.54	3.71	0.49
rules for homework	0.90	0.25	0.95	0.17	0.93	0.23	0.92	0.25	0.92	0.17
rules for household	0.82	0.34	0.92	0.21	0.90	0.27	0.87	0.31	0.88	0.19
rules for tv	0.66	0.39	0.71	0.37	0.72	0.40	0.62	0.45	0.66	0.30
privileges for grades	2.76	0.93	3.01	0.88	2.92	0.90	2.83	0.97	2.80	0.68
rules for grades	0.82	0.31	0.87	0.27	0.84	0.32	0.80	0.37	0.81	0.25
limit privileges to poor score	2.55	1.01	2.8.	0.95	2.70	0.98	2.63	1.04	2.66	0.70

Analysis

Data were analyzed in four steps. First, descriptive statistics were generated for all variables including means and standard deviations. The descriptive statistics were also calculated for each of the four ethnic groups. Secondly, exploratory factor analysis (EFA) with SPSS was conducted to develop the three main PI dimensions including Parent-Child Communication, School Involvement and Home Supervision. To better distinguish factors, *varimax* is used. Items with path loadings larger than 0.4 were considered contributors to the specific factor.

Thirdly, the ANOVA was used to test for mean differences across ethnic groups on each of the sub-dimensions of PI *Scheffe's* post hoc procedure is used because it is appropriate for unequal group sizes.

Finally, logistic regression is utilized on the total sample and each ethnic group to analyze the relationship between sub-dimensions of PI and the dependent variable, student high school graduation. In the current study, graduate is coded as 0 and not graduate coded as 1. Thus, a positive result indicates a negative relationship to high school graduation, while a negative result indicates that the factor facilitates high school graduation.

Missing Data

Among 54 variables and 16,252 cases, 19.63 percent are missing data in total. The variable with the most missing cases (25.9 percent) were: BYP53G (Parent contacted

school about positive/good behavior), BYP53F (parent contacted school about problematic behavior), and BYP53C (parent contacted school about plans after high school). The variables with the least missing cases (23.7 percent) are items BYP55D (how often make/enforce school night curfews), and BYP56F (provide advice about things troubling tenth grader).

Missing data in the current study is handled with the EM algorithm, an approach explicitly introduced by Hartley (1958) as a procedure for calculating maximum likelihood estimates given a random sample of size n from a discrete population where some of the observations are assigned not to individual cells but to aggregates of cells (Dempster, Laird & Rubin, 1977). It consists of two steps, the expectation step (E-step) and the maximization step (M-step). Utilizing the EM Algorithm avoided the risk of a Type I error that may be caused by other common approaches for handling missing data, such as list-wise deletion and mean substitution.

Results

A summary of the descriptive statistics of each specific PI item across ethnic groups is reported in Table 1. The larger means indicate the higher expectations, or more frequent involvement.

Factor Analysis

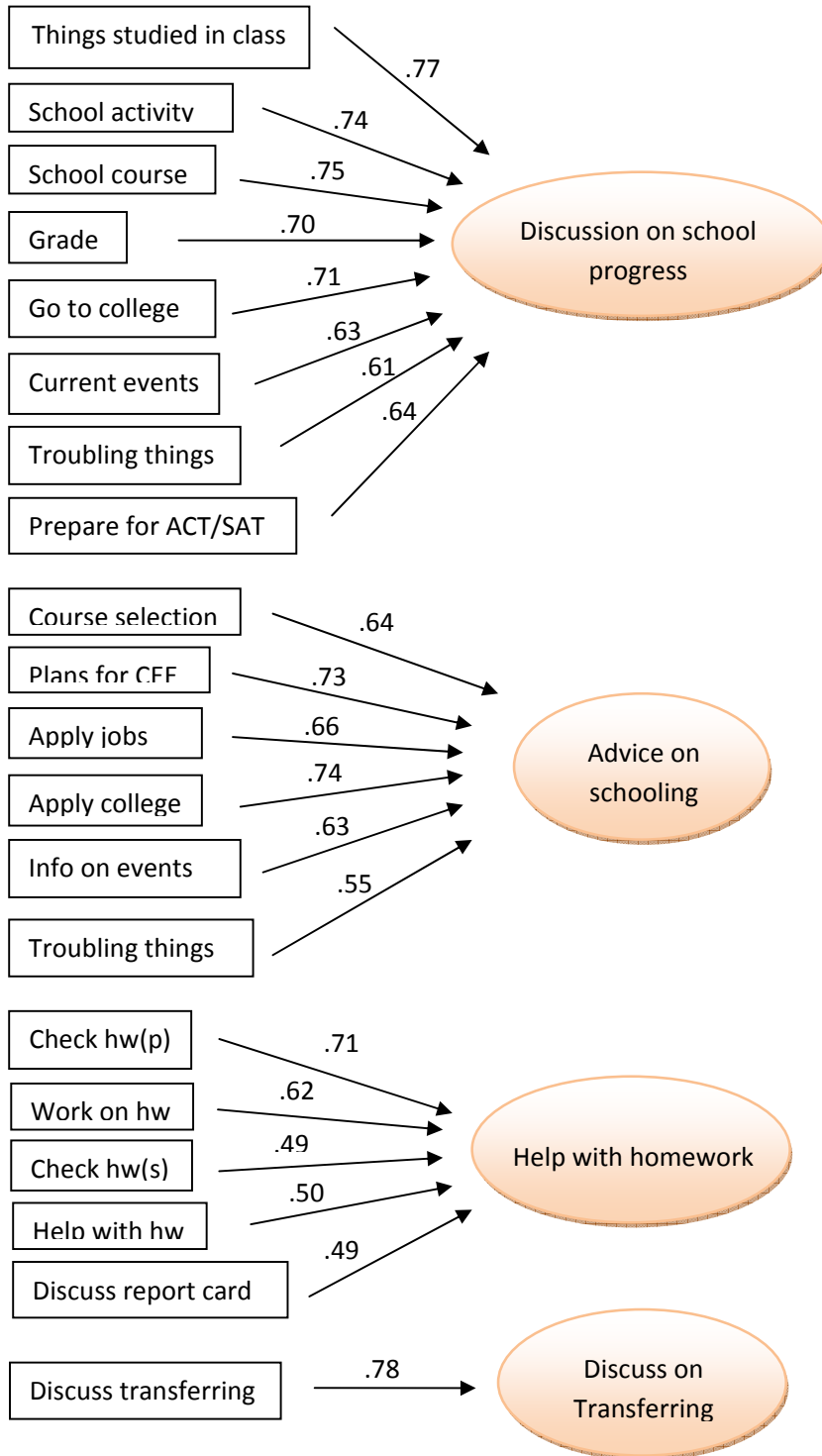
Three dimensions of PI (Parent-Child Communication, School Involvement, and Home Supervision) are handled with factor analysis and 9 sub-dimensions in total obtained from this procedure.

The result of factor analysis on the Parent-Child Communication (PCC) dimension was reported in Figure 2. Four factors are obtained based on exploratory factor analysis on all the relevant items of PCC in the ELS: 2002 dataset. The first factor is defined as Parents and Children Discuss School Progress (PCC1), which accounts for 0.24 of the total variance. Eight items such as discussion of school courses, going to college, and current events are chosen as contributors to this factor. All items included are in the same direction: a higher response score indicates more frequency in discussion. Thus, a high score of PPC1 indicates more discussion on school progress. The second factor is defined as Advice on Schooling (PCC2), accounting for 0.14 variance of the total. It was based on six items ranging from advice on course selection to advice on job application. Again, a high score of PPC2 indicates parents provide advice on schooling more frequently. The third factor is defined as Parents Help with Homework (PCC3) which contributes 0.07 to the total variance. It is based on five items relevant to involvement in homework (e.g. checking homework, help with homework, and work on homework). A high score of PCC3 indicates parents help on homework more. The last dimension is defined as Discuss on Transferring (PCC4) and accounts for 0.05 of the total variance. It is obtained from item “Discuss Transferring with Parents”. A high score of PCC4 indicates parents discuss more with children about transferring.

Three factors contribute to the *School Involvement* (SI) dimension in the factor analysis procedure. The first factor is Parent Participated in School Activities (SI-1), which consists of six items: take part in parent-teacher organization, belong to parent-teacher organization, school volunteer work, participate in parent-teacher meetings,

Figure 2

Factor analyses on parent-child communication (PCC)



contact about volunteer work and belong to other parent organizations. It accounts for 0.25 variance of the total variance. A high score of SI-1 indicates parents participated more in school activities. The second factor is defined as Contact School About Academic Plans (SI-2), accounting for 0.16 of the total variance. It consists of three items about school plans, ranging from courses selection to plans after school. A high score of SI-2 indicates that parents contact the school about school plans more frequently. The last factor is defined as Contact School about Student Performance (SI-3). It is based on four items relevant to academic performance, ranging from contacting the school about attendance to contacting about help with homework. It takes 0.09 of the total variance. A high score indicates parents contact the school about student performance more. The result of the factor analysis in the school involvement dimension is reported in Figure 3.

In the *Home Supervision* (HS) dimension, the first factor consists of five items, ranging from having rules on homework and rules on time spent on TV, accounting for 0.25 of the total variance, which is defined as Setting Family Rules (HS1). A high score of HS1 indicates parents set rules more frequently. Another factor included four items about Setting Family Limits and Privilege (HS2), explains 0.18 of the total variance. It was defined based on four items, such as giving privileges based on a good score, limiting privileges due to poor performance, and limiting games. A high score of HS2 indicates more family privileges and limits on children. The results of the FA in HS are reported in Figure 4.

Figure 3

Factor analyses on school involvement (SI)

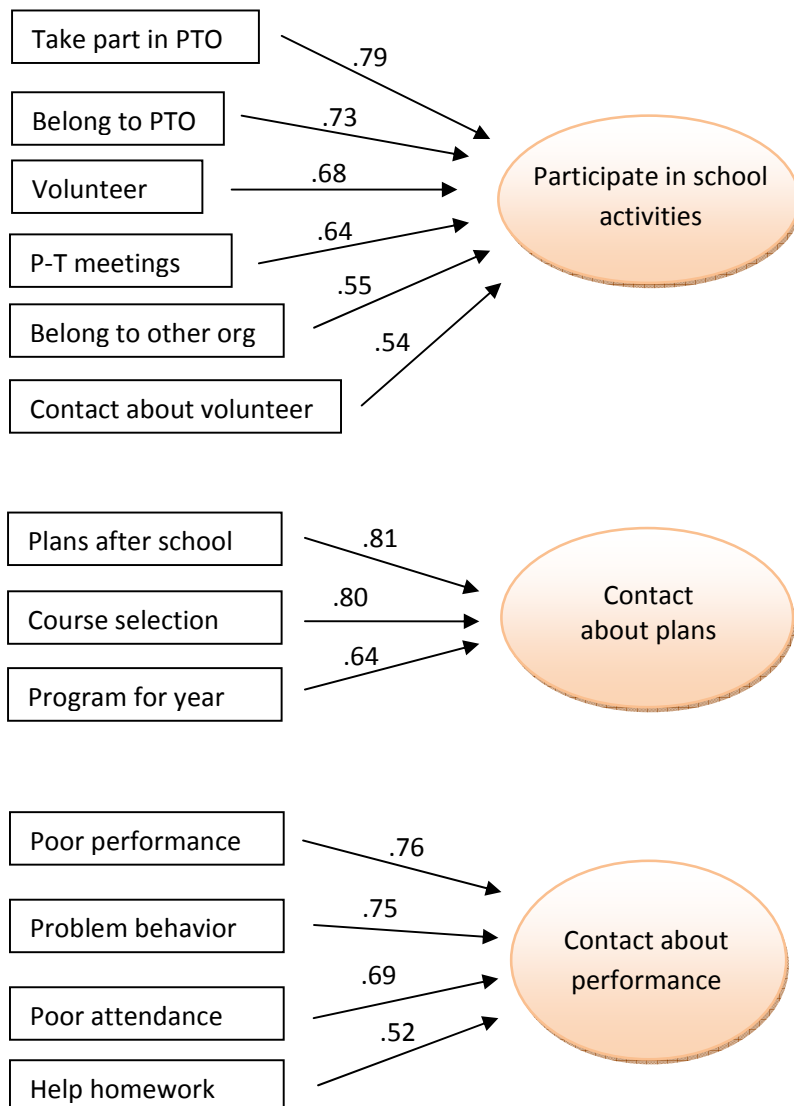
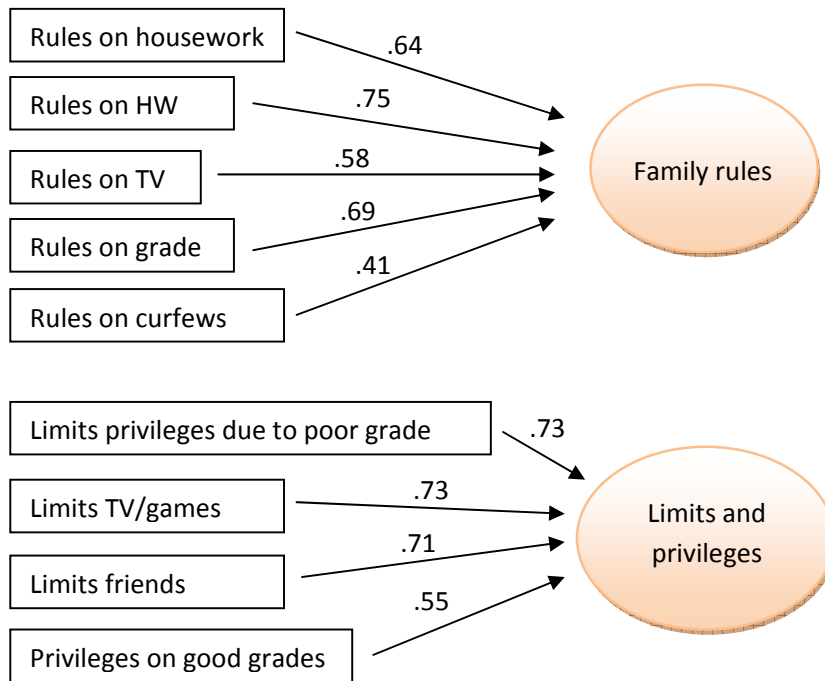


Figure 4

Factor analyses Home supervision (HS)



Based on factor analysis, four PI dimensions are broken into 10 sub-dimensions, they are, *Parent-Child Communication*: (1) Parent-child discussion on school progress; (2) Parents provide advice on schooling; (3) Parents help children with homework; (4) Parents discuss transferring with children. *Parent School Involvement*: (5) Participate in school activities; (6) Contact school about school plans; (7) Contact school about academic performance; *Home Supervision*: (8) Setting family rules; (9) Having limits and privileges; and (10) *Aspiration*.

PI Level across Ethnic Groups

A comparison of mean differences in each sub-dimension of PI across ethnic groups is reported in Table 2. The results indicate the levels of PI vary significantly across ethnic groups. In *Aspiration*, although parents of all ethnic groups expected their children to at least have a 5-point score level (educational level of graduating from college), Asian parents exhibit the highest educational aspiration among all the ethnic groups. White group parents expect the lowest of their children compared to other ethnic groups. Hispanic parents hold significantly lower aspiration than Asian groups, while significantly higher expectations than White parents ($p < .001$). Black parents hold no significant difference in aspiration compared with Asian parents ($p = .467$), while they hold higher aspiration than Hispanic and White parents ($p < .001$).

The four sub-dimensions of PCC also vary significantly across ethnic groups based on ANOVA and the post hoc procedure ($p < .001$). In PCC1, Asian parents report the lowest level, though with no significant difference compared to Black ($p = .062$) and

Hispanic ($p = .823$) parents, they are significantly less involved in discussion than White parents, who are involved at the highest level of discussion on school progress ($p < .001$). Hispanic parents discuss significantly less compared to Black and White groups ($p < .001$) while not significantly more than Asian parents ($p = .823$). In PCC2, both Asian and Hispanic parents provided significantly less advice on schooling compared to Black and White parents ($p < .001$). Asian and Hispanic parents have no significant difference in providing advice on schooling ($p = .917$), and Black and White parents also exhibit no significant difference ($p = .952$). In PCC3, all ethnic groups are significantly different ($p < .001$). Black parents help with homework most frequently, followed by Hispanic and Asian, and White parents help least frequently among ethnic groups. In PCC4, Asian and Black parents have no significant difference in this sub-dimension ($p = .551$), and they discuss significantly more on transferring than Hispanic and White parents ($p < .001$).

In the SI dimension, a comparison across different groups of all three sub-dimensions also indicates it apparently varies across ethnic groups ($p < .001$). In SI-1, Asian parents and Hispanic parents are significantly less involved in school activities compared with Black and White parents ($p < .001$). Moreover, only White parents exhibit a positive mean in this sub-dimension; the results of the other three ethnic groups report negative means, which indicates parents of Asian, Hispanic and Black groups did not contribute to the dimension. Similarly, in SI-2, Asian and Hispanic parents contact the school significantly less frequently than White and Black groups ($p < .001$). Black parents contact the school about academic plans most among ethnic groups. In SI-3, Asian and White parents contact the school significantly less than Black and Hispanic

parents ($p < .001$). Hispanic parents contact school about performance more than other three ethnic groups.

The HS dimension of PI also varies across ethnic groups. In the sub-dimension HS1, all ethnic groups are significantly different. Black parents set rules more than others, followed by Hispanic groups, then White groups, and the Asian parents set family rules least among ethnic groups. In the sub-dimension HS2, Asian parents set privileges and limits on children the most, while White parents involved least.

Parental Involvement and Graduation

The logistic regression results for the full sample are reported in Table 3.

The results for the four factors of the PCC dimension were inconsistent in their association with graduation. PCC1 was not significantly associated with graduation ($B = -.001$, $p = .971$); (2) PCC2, measuring parental advice on schooling, was negatively associated with graduation ($B = .090$, $p < .001$); (3) PCC3 was also negatively associated with graduation ($B = .097$, $p = .000$), while (4) PCC4 had a positive association with high school graduation ($B = -.113$, $p = .000$).

In the SI dimension, the result of the first factor, SI-1 indicates more participation in school activity facilitates the likelihood of graduation with ($B = -.233$, $p = .000$). Both second and third factor, SI-2 and SI-3, are not significant with ($p = .105$ and $p = .559$), indicating neither of two sub-dimensions impact the high school graduation significantly.

Table 2**Parental Involvement Means Comparisons across Ethnicity Groups**

<i>Variable</i> [†] (<i>N</i>)	Asian (N=1465)	Black (N=2027)	Hispanic (N=2227)	White (N=8735)
PCC1	-0.086 (1.03)	0.010 (0.98)	-0.119 (1.00)	0.054 (1.04)
PCC2	-0.174 (1.08)	0.076 (1.00)	-0.198 (1.15)	0.061 (0.98)
PCC3	-0.400 (1.17)	0.189 (0.92)	0.091 (1.02)	-0.004 (1.01)
PCC4	0.264 (1.00)	0.314 (1.04)	0.147 (1.01)	-0.162 (1.00)
SI-1	-0.172 (0.87)	-0.031 (0.95)	-0.213 (0.88)	0.984 (1.09)
SI-2	-0.154 (0.92)	0.054 (1.06)	-0.086 (1.05)	0.025 (1.01)
SI-3	-0.133 (0.82)	0.202 (1.18)	0.226 (1.12)	-0.098 (0.96)
HS1	-0.246 (1.13)	0.187 (0.83)	0.080 (0.98)	-0.025 (1.06)
HS2	0.086 (1.05)	0.059 (1.02)	0.029 (1.02)	-0.028 (1.03)
ASP	5.70 (1.15)	5.63 (1.30)	5.42 (1.38)	5.28 (1.23)

[†]PCC1=Discussion on school progress; PCC2=Advice on schooling; PCC3=Help with homework; PCC4=Discuss on transferring. SI-1=Participate in school activity; SI-2=Contact about plans; SI-3=Contact about performance. HS1=Family rules; HS2=Limits and privileges. ASP=Aspiration. Note that the ANOVA F-statistic for each variable was highly significant ($p < 0.000$), indicating the means varied significantly across ethnic groups. Post-hoc tests were conducted to determine which means varied.

In the third dimension HS, both of the factors, HS1 and HS2 are not significant ($p = .182$ and $p = .442$). This result indicates the dimension HS does not impact high school graduation significantly. The last PI dimension, Parental Aspiration significantly facilitates high school graduation, with ($B = -.075$, $p = .000$). It is consistent with previous research which concluded that parents' high aspirations will improve student academic performance. Family socioeconomic status also benefits graduation with ($B = -.487$, $p = .030$), indicating children in high SES families are more likely to graduate from high school than children with low SES.

Parental Involvement and High School Graduation among Ethnicity Groups

The results of the logistic regression on PI and high school graduation of different ethnic groups are reported in Table 3. The results indicate that the impact of PI varies across ethnic groups.

In parent-child communication (PCC), the first factor PCC1 is not significant in all the ethnic groups. PCC2 is only significant for Whites, which indicates a negative impact of providing advice on schooling on high school graduation with ($B = .089$, $p = .001$). In PCC3, the results also indicate a significant and negative impact on graduation for the White group with ($B = .113$, $p = .000$), while in other groups the effects of this sub-dimension is not significant. The last factor PCC4 is also not significant in any ethnic groups except the White group. The result for Whites is that discussing transferring benefits high school graduation with ($B = -.172$, $p = .000$)

Table 3
Logistic Regression for Ethnicity Groups

Parameter*	Asian			Black			Hispanic			White		
	B	S.E.	sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
PCC1	-.059	.072	.413	-.039	.071	.582	-.036	.059	.541	.027	.028	.330
PCC2	.131	.072	.068	.034	.066	.607	.085	.050	.091	.089**	.028	.001
PCC3	.033	.065	.608	.120	.071	.092	.048	.054	.377	.113**	.027	.000
PCC4	-.057	.064	.379	.017	.057	.766	-.073	.051	.150	-.172**	.025	.000
SI-1	-.394**	.077	.000	-.162*	.063	.011	-.274**	.057	.000	-.203**	.024	.000
SI-2	-.112	.068	.101	.001	.058	.982	.008	.050	.879	-.041	.025	.098
SI-3	.052	.086	.545	-.030	.050	.559	.007	.049	.882	-.021	.028	.457
HS-1	-.076	.068	.263	-.092	.083	.270	-.023	.057	.690	.057*	.024	.018
HS-2	.034	.069	.627	-.055	.069	.432	.005	.058	.933	-.023	.028	.401
ASP	.024	.059	.691	-.077	.051	.126	-.049	.040	.225	-.098**	.024	.000
SES	-.143	.085	.093	-.302**	.093	.001	-.533**	.074	.000	-.615**	.043	.000
Constant	1.191	.343	.001	1.964	.298	.000	1.287	.231	.000	1.746	.129	.000

*PCC1=Discussion on school progress; PCC2=Advice on schooling; PCC3=Help with homework; PCC4=Discuss on transferring. SI-1=Participate in school activity; SI-2=Contact about plans; SI-3=Contact about performance. HS1=Family rules; HS1=Limits and privileges. ASP=Aspiration

**=sig. at $\alpha=.01$ *=sig. at $\alpha=.05$

0=Graduate; 1=not Graduate

In the SI dimension, the first factor, SI-1, is significant in all of four ethnic groups ($p < .05$). Results of each group indicate a positive impact of parents participating in school activities on high school graduation ($B < 0$). Asian children benefited most from parents' participation in school activity with ($B = -.394$), and Black children benefited the least with ($B = -.162$). SI-2 well as SI-3 is not significant in all ethnicity groups with $p > .05$. In the HS dimension, HS1 is only significant in the White group and the impact is negative on graduation with ($B = .57, p = .018$). HS2 is not significant in all ethnicity groups ($p > .05$).

The Parental Aspiration dimension also does not significantly impact high school graduation in all the ethnic groups except for the White group. In the White group, parents that have higher aspirations significantly facilitate their children's graduation, with ($B = -.098, p = .000$). And family socioeconomic status has a significant impact on high school graduation across all the ethnic groups. A high SES associates with graduation positively in all ethnic groups.

Discussion

The results of current study address the three research questions put forward at the beginning. In this section the research questions are revisited and connected with the results. Additional interpretive discussions are provided.

Sub-Dimensions of PI

The first research question is what sub-dimensions of PI can be identified from items in ELS: 2002 data. According to the result section, ten sub-dimensions were developed based on the general four dimensions of PI by factor analysis.

The first dimension, Parent-Child Communication (PCC) consists of four sub-dimensions: (1) Parent-Child Discussion on School Progress; (2) Parents Provide Advice on Schooling; (3) Parents Help Children with Homework; (4) Parents Discuss Transferring with Children. The result is consistent with the meta-analysis by Fan (2001) which concluded PPC includes discusses school progress (Yap and Enoki, 1995; Peng and Wright, 1994), assistance with homework (Peng and Wright, 1994), interest in home / school work (Paulson, 1994). Parents Discuss Transferring with Children is a new sub-dimension developed in current study.

Three sub-dimensions included in *Parent School Involvement* (SI) are: (5) Participate in School Activities (SI-1); (6) Contact School about School Plans (SI-2); (7) Contact School about Academic Performance (SI-3). The sub-dimensions developed dimension also supported by previous study which categorized SI to parents contact school, parents attend school functions such as parent-teacher organization, and parents volunteer at school (Paulson, 1994; Ho Sui-Chu & Willms, 1996). In current study, SI-1 includes parents attend school functions and parents volunteer at school; while Parents Contact School was broken into two factors, that is their contact about school plans (SI-2) and their contact about performance (SI-3).

Two sub-dimensions are developed in *Home Supervision*: (8) Setting Family Rules; (9) Having Limits and Privileges. Though this categorizing way is inconsistent with common classification of HS, which includes more specific rules, such as time spent doing homework, time spent on TV and home surrounding conducive to studying (Fan, 2001), all these rules are included in the two sub-dimensions.

Parental Involvement Level across Ethnic Groups

The second research question is on different levels of PI across ethnic groups. A comparison of means of 10 sub-dimensions of PI indicates all of them vary across ethnic groups, which is supported by previous study as well.

In Aspiration, Asian parents expected highest on children's education level than other four ethnic groups. This is consistent with related research on race difference on parents' aspiration and expectations. Yoko and Holloway (2010) reviewed eight carefully chosen articles contrasted Asian parents and other groups and found seven concluded Asian American parents tend to hold higher expectations than other groups. An example is Peng and Wright (1994) found 80% of Asian American parents expected their children to attain bachelor's degree, compared with 58% of African American parents, and 62% European American parents based on analysis of NELS data.

The finding that Asian parents involved PCC1 and PCC2 least among ethnic groups may be explained by Asian students' relatively higher academic performance in school. As parents tend to communicate with children more when problems are observed. Another finding is Black and Hispanic parents are significantly help with homework

more than Asian and White parents. This is inconsistent with some research that found Asian parents check homework significantly more than other ethnic groups (Mau, 1997). A possible explanation is that generally for tenth graders, parents usually help with homework when troubling events in academic learning are discovered. Thus, the result can be explained by low graduation rate and academic achievement of Black and Hispanic groups comparing with Asian and White groups.

In SI dimension, Asian and Hispanic parents contact school on school plans and participate in school activities significantly less than White and Black groups. According to Mau (1997), Asian and Asian American parents are less likely to attend school function comparing to Whites. This may be caused by minority groups' relatively limits in English proficiencies and lack of familiarity with American culture. Thus, compared with Asian and Hispanic parents, White parents may feel more comfortable to participate in school meetings, activities and join organizations and form better understanding of students school progress and help with their children more effectively.

Parental Involvement and High School Graduation among Ethnicity Groups

The third research question addressed in this study is whether the association between PI and high school graduation differs across ethnic groups. According to the result section, the effects of sub-dimensions of PI on high school graduation of White group are very similar to the total sample. The reason is that the total sample is predominantly White, who account for more than 8,000 of the total 16252 subjects. And

for minority groups, most of sub-dimensions of PI have no significant impact on graduation, which indicates a disadvantage of minority group in the effect of PI.

For parent-child communication (PCC), PCC2 negatively associates with students' graduation in Whites. A possible explanation for this finding is that parents provide advices when children's performances are problematic. PCC3 decreases the likelihood of high school graduation in White group as well as the total sample. This finding is inconsistent to many of the previous research which indicates parents' homework involvement improves student academic success (Ames, 1993; Chen & Stevenson, 1989; Paulson, 1994), and researchers' also concluded that parents' help with homework supports student attributes related to achievement such as their perceptions of personal competence, attitudes about homework and self-regulatory skills (Hoover-Dempsey, et al., 2001) and finally contributes to academic achievement. The potential reason for the negative effect of helping on homework is that during children's young age (tenth grade), parents seldom help their children on homework, unless problems of children' academic study are found. In this condition, more frequency in helping homework indicating troubling academic learning, and thus, children with more homework help tends to not graduate from high school. Considering the race difference in current study, PCC2 and PCC3 only significant in White group, is consistent with McNeal (1999), who found Parent-Child Communication significantly reduce the likelihood of dropout and truancy in Whites, while there is no significant relationship in Asian, Black, and Hispanic groups.

The main finding in the current study is the impact of SI-1 on high school graduation. For all the ethnic groups, parents participate in school activities associates with their children's graduation positively. This is consistent to the review of previous studies (McNeal, 1990; Ho Sui-Chu & Willms, 1996) which reports participating in school organizations and meetings is beneficial to students' academic achievement. The explanation is that through participating school organizations and meetings, parents are able to form a better understanding on school works and progress, and provide correct feedback on children's school events; and it also facilitates parents to use school influence, such as teachers, to help children when they are in trouble and avoid children's dropouts and truancy in time. Asian children benefit most from it, though comparison of means indicate that White parents contributed most in this PI dimension and Asian parents participate least in school activities. In aspiration dimension, it seems that Asian parents' aspiration has no much impact on high school graduation, while for White, Black and Hispanic groups, the higher the parents' aspiration, the more likelihood of graduation.

Limitation of Current Study

While drawing some valuable conclusions, the current study still has several limitations. First, some PI items in ELS: 2002 dataset are dichotomous variables (e.g., 0 = no, 1 = yes). The statistical algorithm employed by SPSS is not optimal in factor analysis dealing with this kind of items as it assumes normal distribution on each item. Other software such as MPlus has the appropriate algorithm, which might produce different and

more accurate results. Secondly, using logistic regression model cannot directly evaluate indirect effects, mediators, and include a measurement model. In current study, it cannot measure the relationship between four general dimensions of PI. A review of studies in this topic indicates Structural Equation Modeling (SEM) is frequently utilized to evaluate relationship between PI dimensions and students academic performance (Park & Palardy, 2004). Moreover, since previous study indicated SES play as mediates the effects of PI and academic performance (e.g. McNeal, 1999), which cannot be measured by logistic regression model, path analysis and SEM may be used.

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