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국제학석사학위논문

Does Family Matter?
A Study on the South Korean Student's
Family Background and Academic
Achievement

한국 학생의 가족배경과 학업성취도에 관한 연구

2014년 8월

서울대학교 국제대학원
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최 수 진

Does Family Matter?
A Study on the South Korean Student's
Family Background and Academic
Achievement

A thesis presented

by

Suejin Choi

to

Graduate Program in International Cooperation
in partial fulfillment of the requirements
for the degree of Master of International Studies

August 2014

Graduate School of International Studies
Seoul National University
Seoul, Korea

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한국 학생의 가족배경과 학업성취도에 관한 연구

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이 논문을 국제학석사 학위논문으로 제출함

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A Study on the South Korean Student's Family
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Abstract

Does Family Matter? A Study on the South Korean Student's Family Background and Academic Achievement

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This study investigates the family dynamics of the South Korean student and provides empirical evidence that family background and academic achievement are closely related. The research is based on an academic survey of 357 undergraduates from high achieving and low achieving tertiary institutions, conducting in 2007 and 2012. The first part of this thesis outlines the importance of education in South Korea and the research background. A literature review shows that much of the previous studies on family background and academic achievement have focused on single groups of achievers, and are based on American or European contexts. This study investigates the South Korean family during the notoriously tough 3rd year of high school. The family characteristics of higher and lower academic achievers are examined under four categories: financial capital, human capital, social capital, and personal effort. Following the conceptual

framework and hypothesis section come the results of the survey. Various analytical procedures have been conducted for this study using statistical software. Results indicate a positive correlation between a student's academic achievement and family wealth; parents' education level; and parental involvement. Each of these categories is further investigated with sub-categories such as place of residence, mother's employment status, and birth order. Results show that the higher achiever is usually the firstborn child whose father is highly-educated and mother is highly-educated but stays at home during the final year of high school. Either one of the parents may have received higher education from overseas. The family may also live in a lucrative neighborhood and belong to the upper-middle income bracket, being able to pay for costly private education and allowing the mother to stay at home. A summary of the findings concludes this study along with implications and propositions for future research.

Keywords: family background, academic achievement, financial capital, human capital, social capital, South Korea

Student Number: 2005-22910

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Chapter 1. Introduction

1.1 Research Background

Education is an all-pervasive aspect of the South Korean culture and society. The zeal for higher education in South Korea is so great it has even been called a ‘national obsession’ (Seth, 2002) and for good reason. On the day of the national university entrance exam (수학능력시험) or College Scholastic Achievement Test (CSAT), air traffic is controlled and business hours are adjusted for the listening comprehension portion of the test to ensure the whole nation is hushed for the optimal, uninterrupted listening-test environment. South Korean students spend a majority of (if not all of) their teenage years studying for the CSAT and many attend private cram schools (학원; hagwon) or receive private tutoring (과외; gwawae) at home. The education hype in South Korea affects real estate prices too. Housing is more expensive in areas that have reputable high schools within the district, reflecting the South Korean desirability to live in a good educational environment.

Entering a ‘good’ university is a source of great pride for South Koreans. Traditionally, education was valued as the most important requirement for success

in Korea (Sorenson, 1994). The success of a family member at entering a prestigious Seoul-based university naturally meant they would end up with the best jobs after graduation. This also ensured that one would enter into a ‘good’ marriage (with marriage considered one of the most important rites of passage in traditional Korean culture). The children born into this ‘good’ family would then also have a better chance of receiving the best education opportunities, and so the cycle would continue. Although university degrees today do not guarantee the career prospects they once did in the past, competition into prestigious universities is still fierce.

Not having a university degree at all is generally looked down upon in Korean society and may make job prospects bleak. This is reflected in the percentage of tertiary-educated students in the country. According to the OECD, in 2010, nearly 98% of South Koreans in the 25-34 age group attained high school education, and 64% of the same group were tertiary-educated – this was the highest among OECD's 34 member countries.

The so-called ‘education fever’ (교육열기) also translates to hefty investments for the South Korean family. In 2012, education expenditure took up the largest proportion (16.9%) of total household spending for South Korean families with two or more unmarried children (Statistics Korea, May 2013). This was a higher share than the average spending on food & soft drinks (13%), restaurants & hotels (12.5%) and transportation (11.8%), and three times higher than the average household expenditure on entertainment & culture (5.5%).

Affected by both domestic and international factors, the average education spending for South Korean households has fluctuated over the years. But the education expenditure gap between the nation's rich and poor has continued to widen. The education spending gap recorded a 10-year high in the fourth quarter of 2012 (Statistics Korea, March 2013). Families in the top 20 percent income bracket spent an average of 407,038 won (\$375) per month on education, which is 7.1 times higher than the average 57,248 won (\$53) spent by households in the bottom 20 percent bracket during the same period. According to data compiled by the Bank of Korea (BOK), lower-income households are expected to spend less on education in the future, but richer families are likely to spend more. The BOK's Consumer Sentiment Index (CSI) for South Korean household spending on education in February 2013 stood at 90 for households with a monthly income of less than 1 million won (\$940) and 112 for higher-income households with a monthly income of 4-5 million won (\$3,750-4,690). A reading under 100 indicates that families will cut back on spending. (A reading above 100 suggests families will increase spending on education.)

1.2 Research Questions

The central research questions asked throughout this study are: how different are the families of high versus low academic achievers? Is there a

correlation between family background and academic achievement in the Korean family? In essence, does family actually matter?

1.3 Significance of Research

With education being of such importance in the average South Korean household, the purpose of this research is to identify whether or not family-related traits (money, parents' education, involvement, and so on) can be predictors of academic success, based on real-life comparative data. Whereas much of the existing literature sheds light solely on higher achievers in South Korea or more commonly on students in the United States and Europe, this dissertation discusses both higher and lower achievers in a South Korean setting. This comparison allows for variables that would otherwise be seen as insignificant to be shed light on. The study combines data five years apart from each other, showing that results are still consistent and that a correlation exists between family background and academic achievement.

Chapter 2. Method & Data

To identify the relationship between family background and academic achievement despite the limitations of an academic survey, each of the family factors discussed in this study were regressed on the student's academic achievement so that the independent variable would be academic achievement (in this case, higher achieving and lower achieving schools) and the dependent variables were each of the possibly contributing factors. This way, it was possible to compare the outcomes of higher achievers and lower achievers to find out which, if any, factor was the most different between the two groups, and in turn allude to the fact that the contrasting family background factors attributed to the student's academic achievement. The real names of the two tertiary institutions are undisclosed but are referred to as HAA and LAA, symbolizing high academic achievement and low academic achievement, respectively. The survey participants were based on random sampling but were all undergraduates. Two independent surveys took place, the first in 2007 and again in 2012, and the students were asked to reflect back on their final year of high school when answering the survey questions.

14 common questions were asked in the two surveys. These included but were not limited to parents' education level, place of residence, housing type, monthly costs for private education and study-abroad experience. The findings of

this research do not represent all of South Korea, but nonetheless the results can be seen as valid due to their consistency in both years as well as the results being reflective of previous research studies on family background and academic achievement.

To test the research questions, regression analysis was conducted on 357 sets of data (180 undergraduate students from HAA and 177 from LAA) using SPSS, Minitab and Excel software. The analysis was conducted to ascertain the effects of parents' education level, maternal employment, place of residence, type of housing, income bracket, family size, private education, study-abroad experience, and so on, on the likelihood that participants would be academically successful. In 2007, a total of 140 undergraduates filled out paper questionnaires distributed at both HAA and LAA. 70 undergraduates were randomly sampled at each school. Five years later, in 2012, another separate random sample of 110 HAA undergraduates and 107 LAA undergraduates participated in a similar academic survey, asking the same basic questions regarding family background and academic achievement. In all, 360 questionnaires were distributed among the two schools and 357 were returned (return rate of 99.1%).

In terms of nationality and eligibility for the survey, all 357 participants were Korean nationals and had lived with their parents during the last year of high

school before entering their respective tertiary institutions. The students completed the survey on the spot with the surveyor present. The questions that were asked concerned family background (family wealth, parents' education, parental involvement) and personal effort.

For the purpose of this study, the measure of academic achievement was determined by which school the student was enrolled in. HAA has been the undisputed leader of tertiary education in South Korea since its foundation in 1946. The university's freshmen belong to the top 2.5% of those who take the CSAT and graduates of HAA have long served as leaders in Korean society (Times Higher Education, 2013). In 2012, 38% of South Korea's CEOs and 93% of judges in the Supreme Court were HAA alumni. Around half of the members of the National Assembly were also part of the university's alumni that year. The 2013-2014 Times Higher Education World University Rankings considered it 44th in the world and 4th in Asia, whilst the university was ranked 35th in the world and 6th in Asia by the QS World University Rankings (2013/14). In conducting this survey, HAA was also a choice of personal convenience. LAA is a 2-year college founded in 1973. Located in Gyeonggi Province, the school is situated about 26 km away from HAA. According to college admissions guidelines in 2007, on a scale of 1 to 15 with level 1 representing the highest GPA percentile at high school and level 15 being the lowest, the entrance eligibility for LAA was level 15, while HAA

students in the same year were required to have grades within the top 2 levels. As such, LAA was chosen as the comparison group against HAA due to the contrasting admissions requirements, added to the school's convenient accessibility and proximity.

The variables for family background used in this study can be divided into four categories: financial capital, or family wealth (participants were asked whether the housing they lived in during the last year of high school was their own or rented, district of residence, perceived income bracket, and whether they had any study-abroad experience); human capital, or parents' education level; social capital, or parental involvement (the survey asked how frequently students engaged in conversation with their parents about school life, mother's employment status during the final of high school, number of siblings, and birth order). The fourth category – personal effort (regardless of family background) – was deliberately added in order to compare family factors with a non-family factor. Measurements for personal effort were based on identifying how many hours the participants slept during their final year of high school, and how much was spent on private education under the assumption that the less invested in private education, the more time spent on self-study.

Chapter 3. Literature Review

3.1 Family Background and Academic Achievement

Over the past several decades, the importance of family background in a student's academic achievement has been greatly emphasized. Rumberger (1995) singled out student family background as 'the most significant important contributor to success in schools,' adding weight to the works of earlier researchers who also argued that family plays a major part in influencing a student's success at school (Swick & Duff, 1978). Along with parents' education level and family wealth, parent involvement is one of several family background factors that have been widely researched and noted as a big contributor to a student's educational achievement. Parents may, however, become involved with their child in different ways (Muller, 1995) depending on the resources available to them (Baker & Stevenson, 1986). Coleman (1988) suggested that family background can be analytically separated into at least three distinct components: financial capital (family income or wealth), human capital (parent education), and social capital (relationship between parent and child, i.e. parent involvement). Financial capital can be measured by family income or wealth; human capital is best measured by the level of parents' education; and social capital has to do with the relationship

between parents and children. The more a student has access to each of these components, the more likely they will achieve higher academic achievement. This study revolves around the conceptual framework of these three capitals, plus a non-family factor.

Financial Capital (Family Wealth)

Students from low socioeconomic families have been shown to have significantly less school success than students from high-income homes (Martini, 1995). According to data released by Seoul National University, 29.1% of the school's newly enrolled students in 2003 said their family had a monthly income of 5 million won (\$4,600) or more, which would categorically place them in the higher-income bracket. The percentage was bigger for students enrolled in the departments of business administration (46.7%) and medicine (46.2%).

A correlation was also found between successful SNU candidates of 2013 and their district of residence during high school: it seemed to have made a difference whether they lived in Seoul and its vicinity or not (Korean Educational Development Institute). 56.7% of SNU freshmen in 2013 said they grew up either in Seoul (34.9%) or the surrounding metropolitan area (21.8%). This is notable in that housing prices are significantly more expensive in the capital city than elsewhere in the country.

Human Capital (Parents' Education)

Literature suggests that parents' education directly influences a student's academic achievement (Jimerson, Egeland, & Teo, 1999; Kohn, 1963; Luster, Rhoades, & Haas, 1989). More educated parents are likely to create an environment that facilitates learning for their children (Teachman et al., 1997).

According to the OECD, a prospective university student with at least one parent who has attained a tertiary degree is almost twice as likely to be in higher education, compared to those from families with low levels of education (OECD "Education at a Glance" 2012). In 2006, 71.1% of parents of SNU freshmen had a bachelor's degree, and 24.7% had a master's or higher (Korea Employment Information Service, 2007). These figures are much higher in the same report updated in 2013 on the characteristics of SNU freshmen. 83.1% of the fathers and 72% of the mothers had a bachelor's or higher degree.

Social Capital (Parental Involvement)

Parents who are more educated are also assumed to involve themselves in their children's school experiences (Steinberg et al., 1992; Useem, 1992). Students from families with higher parental expectations and involvement are more likely to

be monitored of their school work and receive more overall supervision of social activities compared to students from families with parents that are less involved and have lower expectations (Jacob and Harvey, 2005).

While parent involvement has been widely accepted to make a difference in the student's education, there are many different ways for parents to be involved with their children's school experiences. Depending on the resources available to them, parents may become involved differently (Baker & Stevenson, 1987; Lareau, 1996). In this study, parental involvement and mother's employment status are examined under the social capital category.

In the 2013 data of SNU freshmen, 48.4% of the mothers were housewives, followed by 14% that worked in the service industry, and 12.2% were professionals. Although compared to 2004, the percentage of stay-at-home mothers has dropped from what was then 64.3%, but still remains high a decade later.

3.2 Non-Family Factor and Academic Achievement

Several studies have also highlighted the relationship between academic achievement and factors that disregard family background, such as self-regulated learning and self-efficacy. The concept of *self-regulated learning* has been described as a trait of students who are self-directed and self-motivated

(Zimmerman, 1990). The self-efficacy component of Bandura's (1986) social cognitive theory is about people who do better because they think they can perform well instead of think they will fail. These students are capable of becoming masters of their own learning. Indeed not all high achievers come from high socioeconomic families with parents who are highly educated and involved in their children's education. Students from low socioeconomic families may also perform academically well. Personal effort, therefore, is examined in this study as an additional factor alongside the three aforementioned family factors (financial, human, and social capital).

Chapter 4. Conceptual Framework & Hypothesis

Coleman's categorization of family background components that affect academic achievement (financial capital, human capital, social capital) forms the basis for this study's conceptual framework. Added to this is a non-family category (personal effort). The four categories are examined throughout this study where HAA and LAA represent higher and lower achievers as independent variables and each of the family and non-family factors act as dependent variables. The conceptual framework is illustrated in Figure 1 (on page 16). Each variable is tested to examine the differences in family background between higher and lower achievers. Data analysis shows there is a clear difference between the two groups.

The central operating hypothesis is that family background does indeed make a contribution to a student's academic achievement. Under the presented framework, this research investigates the relationship between various dimensions of family background and a student's academic achievement, with four hypotheses.

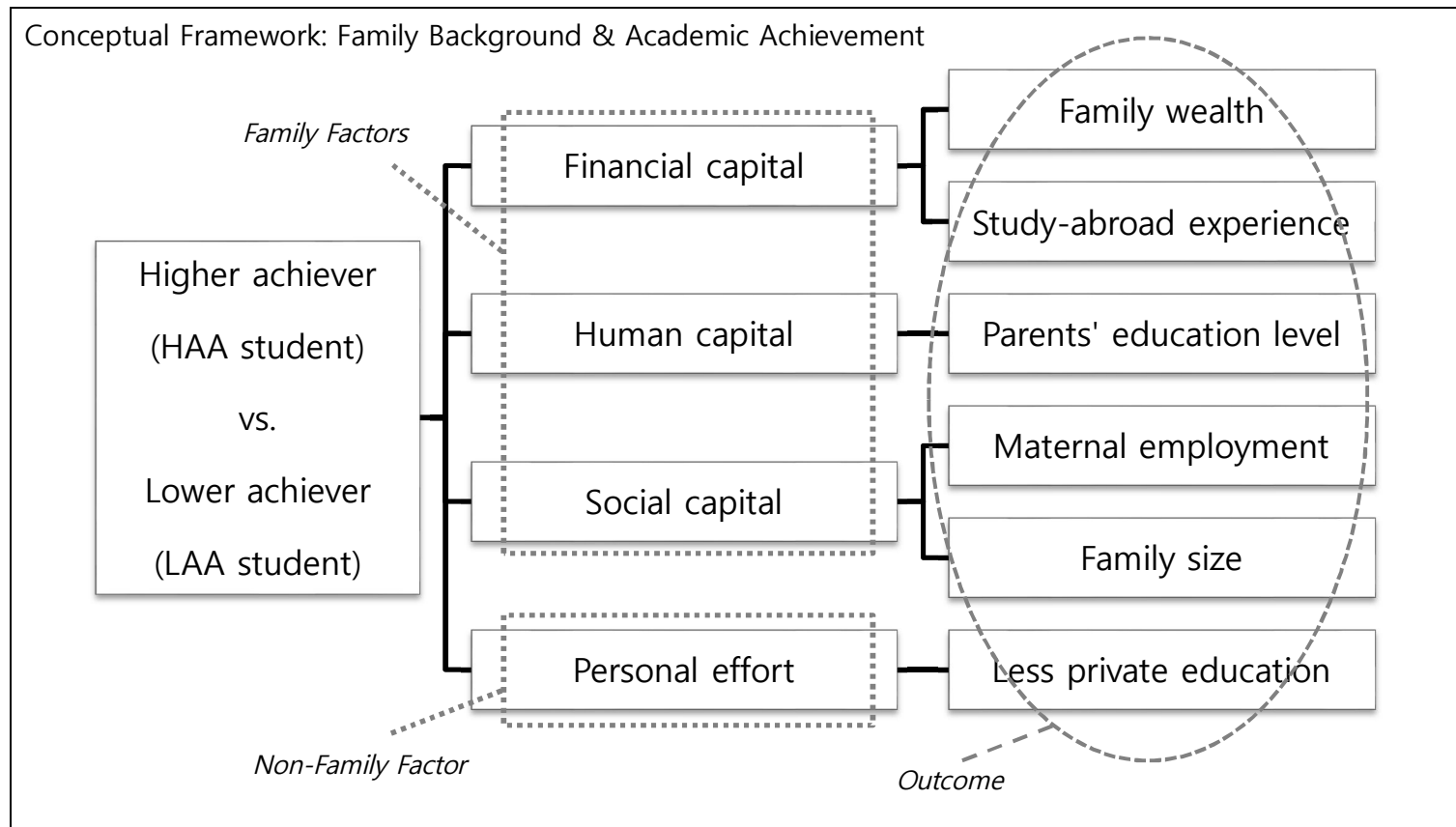
Hypothesis 1: Family wealth (as characterized by district of residence, housing type, income, and study-abroad experience) is positively associated with a higher level of academic achievement.

Hypothesis 2: Parents' education level (as characterized by the number of years each parent received formal education and whether or not they received a degree from overseas) is positively associated with a higher level of academic achievement.

Hypothesis 3: Parental involvement (as characterized by mother's employment status during final year of high school, frequency of conversations between parents and student, family size and birth order) is associated with a higher level of academic achievement.

Hypothesis 4: Personal effort (as characterized by less time spent on private education and less hours of sleep) is associated with a higher level of academic achievement.

The questions asked in 2007 and 2012 included 14 common questions (excluding which tertiary institution the participant belonged to) as well as 17 supplementary questions in 2007 and 44 extra questions in 2012. In this study, the surveys of both years are compiled into one, with only the overlapping 14 questions and their responses examined. Table 1 (on pages 17-19) shows the questions asked to test each research hypothesis and their results at a glance.



<Figure 1> Conceptual Framework of Study

<Table 1> At a Glance: Survey Questions, Hypotheses, Results

Variable	Survey Question	Survey Response	LAA Average	HAA Average	Statistical Significance	Correlation
Academic Achievement	Name of university/college	0=LAA 1=HAA	0	1	-	-
Hypothesis 1: Family Wealth	Perceived Income Bracket	Which income bracket do you think you belong to? 1=Low 2=Middle 3=Upper-middle 4=High	1.937	2.255	significant	0.25
	Residential Area	Did you live in either Gangnam, Seocho, Songpa or Yangcheon? 0=No 1=Yes	0.057	0.244	significant	0.26
	Rented or Owned	What sort of housing did you live in? 0=Rented 1=Owned	0.703	0.772	not significant	0.08
	Study Abroad Experience	Before entering university, did you ever study abroad? 0=No 1=Yes	0.09	0.327	significant	0.29
Hypothesis 2: Parents' Education	Father: Years of Education	Please select the choice that best describes your father's education level. 9 years or less (less than HS) 12 years (High School) 14 years (2-year College) 16 years (4-year University) 18 years or more (Master's, PhD)	13.099 years	15.659 years	significant	0.47
	Mother: Years of Education	Please select the choice that best describes your mother's education level. 9 years or less (less than HS) 12 years (High School) 14 years (2-year College) 16 years (4-year University) 18 years or more (Master's, PhD)	12.302 years	14.782 years	significant	0.47
	Parents' Overseas Education	Do either of your parents have a higher degree from overseas? 0=No 1=Yes	0.028	0.128	not significant	-0.04

Hypothesis 3: Parental Involvement	Mother's Employment Status	Which best describes your mother during your 3rd year of high school?	0=Stay-at-Home Mother 1=Worked part-time 2=Full-time employee	1.185	0.749	significant	-0.24
	Parent-Student Conversation	How often did your parents test results, etc.?	0=Not very interested 1=Average 2=Very interested	1.401	1.544	significant	0.10
	Number of Siblings	How many brothers or sisters do you have?	0 siblings 1 sibling 2 siblings 3 siblings 4 siblings or more	1.291	1.189	not significant	-0.07
	Birth Order	Out of your siblings, which are you?	1=Eldest 2=Second 3=Middle 4=Youngest	2.177	1.76	significant	-0.18
Hypothesis 4: Personal Effort	Hours of sleep	How many hours did you sleep a day?	4 hours or less 5 hours 6 hours 7 hours 8 hours or more	6.298 hours	6.218 hours	not significant	-0.04
	Hagwon Fees	How much did your family pay for private academic institutes (hagwon) per month?	300,000 (less than 300,000 KRW) 500,000 (300,000 to 500,000 KRW) 700,000 (500,000 to 1mil. KRW) 1,000,000 (more than 1mil. KRW)	370,922 KRW	491,275 KRW	significant	0.30
	Private Tutoring Fees	How much did your family pay for private tutoring per month?	300,000 (less than 300,000 KRW) 500,000 (300,000 to 500,000 KRW) 700,000 (500,000 to 1mil. KRW) 1,000,000 (more than 1mil. KRW)	372,593 KRW	405,556 KRW	significant	0.11

Chapter 5. Results

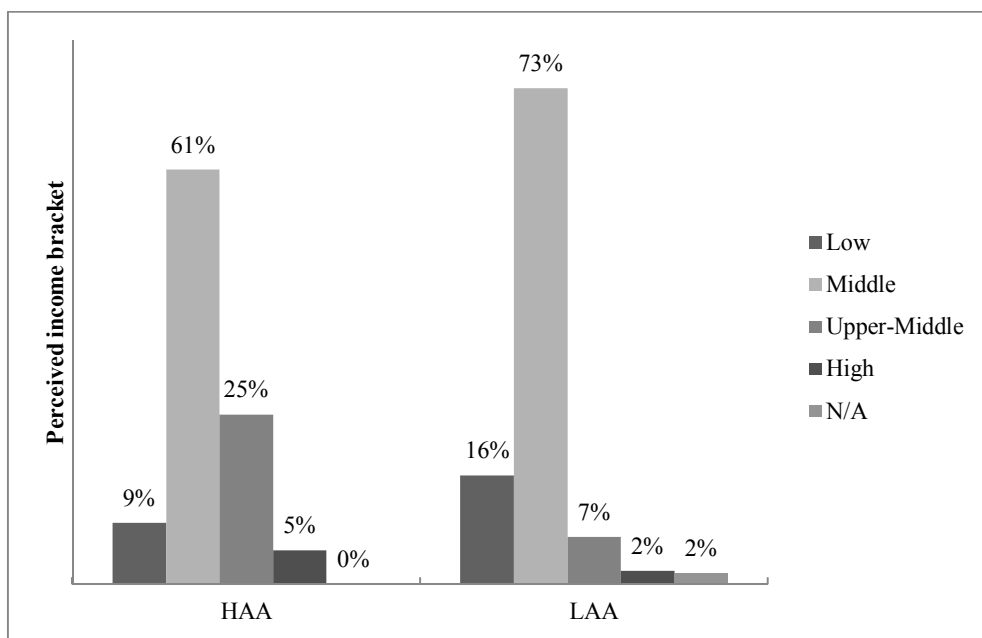
5.1 Financial Capital: Family Wealth

Questions regarding family wealth in the survey were purposely addressed in an indirect manner due to the likely inaccuracy of the participant's knowledge regarding parents' income and also due to the sensitivity of the matter. Students were instead asked which income bracket they *thought* their family belonged to (Perceived Income Bracket); where they lived during their final year of high school (Residential Area); type of residence (Rented or Owned); and study-abroad experience.

5.1.1 Perceived Income Bracket

Regression analysis shows that around 6% (Adjusted R Square = .066) of the total variability in Perceived Income Bracket can be explained by Academic Achievement. There is very strong evidence of a relationship between the two (chi-square = 30.058, df = 4, $p < 0.001$). [Table 3, page 21] A combined 30% of HAA students said they believed themselves to belong to the upper-middle to high class

income bracket, while only 9% of LAA students gave the same response. 89% of LAA participants thought they belonged to the low to middle income bracket compared to 70% of the HAA students. A positive correlation ($r = 0.25$) also indicated that high academic achievers are more likely to belong to wealthier families.



<Graph 1> Perceived Income Bracket and Academic Achievement

		Perceived Income Bracket					Total
		.00	Low	Middle	Upper-middle	High	
Academic	LAA	3	29	130	12	3	177
Achievement	HAA	0	17	109	45	9	180
Total		3	46	239	57	12	357

<Table 2> Perceived Income Bracket and Academic Achievement: Count

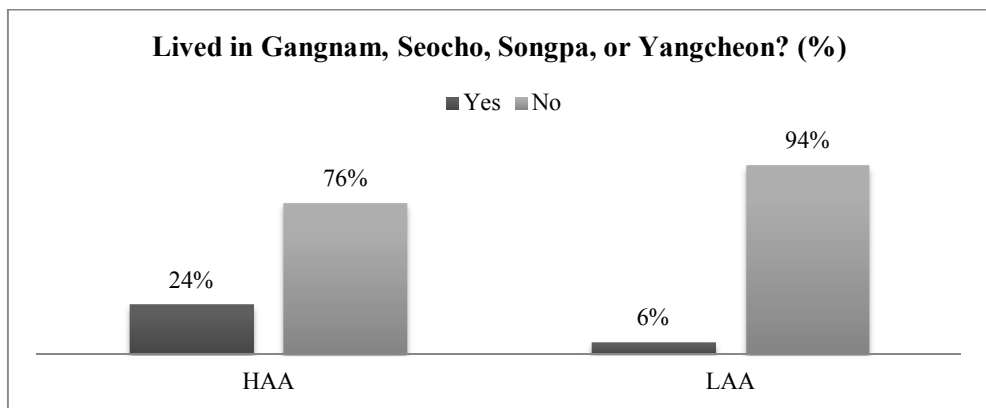
<Table 3> Chi-Square Tests (Pearson Chi-Square)

	Value	df	Asymp. Sig. (2-sided)
Perceived Income Bracket	30.058 ^a	4	.000
Residential Area	24.556 ^b	1	.000
Type of Residence (Rented or Owned)	2.731 ^c	1	.098
Study-Abroad Experience	30.304 ^d	1	.000
Father: Years of Education	101.833 ^e	5	.000
Mother: Years of Education	107.042 ^f	6	.000
Parents: Overseas Education	12.231 ^g	1	.000
Mother: Employment Status	30.234 ^h	2	.000
Parent-Student Conversation	5.921 ⁱ	2	.052
Number of Siblings	7.214 ^j	4	.125
Birth Order	12.954 ^k	4	.012
Hours of Sleep	9.112 ^l	5	.105
Hagwon Fees	27.609 ^m	4	.000
Private Tutoring Fees	7.713 ⁿ	4	.103

- a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.49.
- b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26.77.
- c. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.10.
- d. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.10.
- e. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.47.
- f. 4 cells (28.6%) have expected count less than 5. The minimum expected count is .50.
- g. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.88.
- h. 0 cells (.0%) have expected count less than 5. The minimum expected count is 32.23.
- i. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.34.
- j. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 1.49.
- k. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.45.
- l. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.47.
- m. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.41.
- n. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.95.

5.1.2 Place of Residence

Survey results show 24% of HAA respondents had lived in the lucrative districts of Gangnam, Seocho, Songpa, or Yangcheon during their final year of high school compared to only 6% of LAA respondents. Regression analysis shows that the relationship between Residential Area and Academic Achievement is statistically significant ($p < 0.005$). 6.84% of the variation in Residential Area could be explained by the model, and the positive correlation ($r = 0.26$) indicates that higher academic achievers tend to live in more lucrative districts than lower achievers. [Table 5, page 23] The Chi-square test also supports the significance of the survey outcome (chi-square = 24.556, $df = 1$, $p < 0.001$)



<Graph 2> Residential Area and Academic Achievement

		Residential Area		Total
		No	Yes	
Academic Achievement	LAA	167	10	177
	HAA	136	44	180
Total		303	54	357

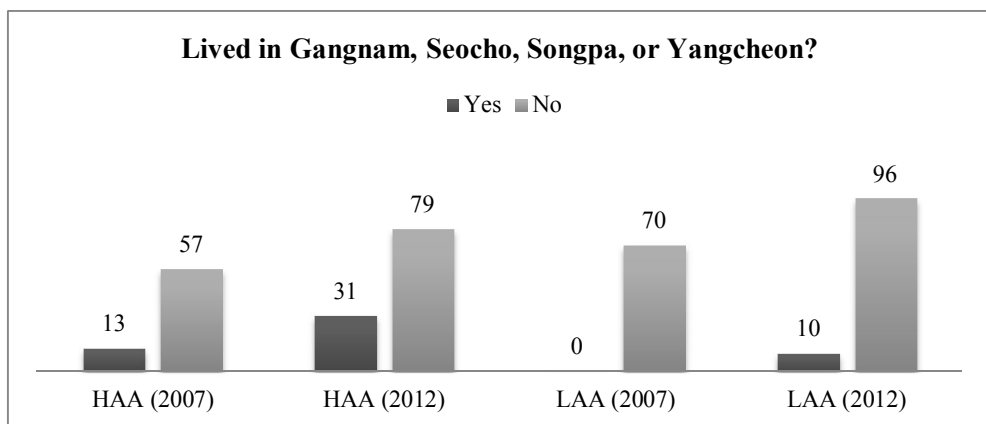
<Table 4> Residential Area and Academic Achievement: Count

<Table 5> Regression Summary: Family and Non-Family Factors Regressed On Academic Achievement (Minitab Analysis)

X variable: Academic Achievement				
<i>Financial Capital Variables</i>				
	Y: Perceived Income Bracket	Y: Residential Area	Y: Rented or Owned	Y: Study Abroad Experience
Fitted equation	$Y = 1.937 + 0.3188 X$	$Y = 0.05682 + 0.1876 X$	$Y = 0.7029 + 0.06937 X$	$Y = 0.09040 + 0.2374 X$
Correlation	Positive Correlation ($r=0.25$)	Positive Correlation ($r=0.26$)	Not Statistically Significant ($r=0.08$)	Positive Correlation ($r=0.29$)
R-squared	6.09%	6.84%	0.62%	8.49%
R-squared (adjusted)	5.83%	6.58%	0.34%	8.23%
P-value, model	<0.005*	<0.005*	0.138	<0.005*
Residual standard deviation	0.627	0.347	0.440	0.391
<i>Human Capital Variables</i>				
	Y: Father's Years of Education	Y: Mother's Years of Education	Y: Parents' Overseas Education	
Fitted equation	$Y = 13.10 + 2.560 X$	$Y = 12.30 + 2.480 X$	$Y = 0.5284 - 0.4006 X$	
Correlation	Positive Correlation ($r=0.47$)	Positive Correlation ($r=0.47$)	Not statistically Significant ($r=-0.04$)	
R-squared	22.34%	22.41%	0.18%	
R-squared (adjusted)	22.12%	22.18%	0.00%	
P-value, model	<0.005*	<0.005*	0.419	
Residual standard deviation	2.392	2.314	4.670	

<i>Social Capital Variables</i>				
	Y: Employment Status of Mother	Y: Parent-Student Conversation	Y: Number of Siblings	Y: Birth Order
Fitted equation	Y = 1.185 - 0.4364 X	Y = 1.401 + 0.1433 X	Y = 1.291 - 0.1025 X	Y = 2.177 - 0.4164 X
Correlation	Negative Correlation (r=-0.24)	Positive Correlation (r=0.10)	Not Statistically Significant (r=-0.07)	Negative Correlation (r=-0.18)
R-squared	5.85%	1.10%	0.51%	3.17%
R-squared (adjusted)	5.58%	0.82%	0.23%	2.87%
P-value, model	<0.005*	0.048*	0.179	0.001*
Residual standard deviation	0.878	0.682	0.717	1.154
<i>Personal Effort Variables</i>				
	Y: Hours of Sleep	Y: Hagwon Fees	Y: Private Tutoring Fees	
Fitted equation	Y = 6.298 - 0.0804 X	Y = 370922 + 120353 X	Y = 372593 + 32963 X	
Correlation	Not Statistically Significant (r=-0.04)	Positive Correlation (r=0.29)	Not Statistically Significant (r=0.11)	
R-squared	0.14%	8.40%	0.94%	
R-squared (adjusted)	0.00%	8.08%	0.58%	
P-value, model	0.492	<0.005*	0.107	
Residual standard deviation	1.094	199386.541	169987.769	
* Statistically significant (p < 0.05)				

In the first year (2007) that the survey was conducted, 18% of HAA students (13 out of 70) had lived in Gangnam, Seocho, Songpa, or Yangcheon, compared to 0 students at LAA. Five years later when the survey was conducted a second time in 2012, survey results show that 28% of HAA respondents and 9% of LAA respondents had lived in the lucrative districts during their final year of high school.



<Graph 3> Residential Area and Academic Achievement by Year

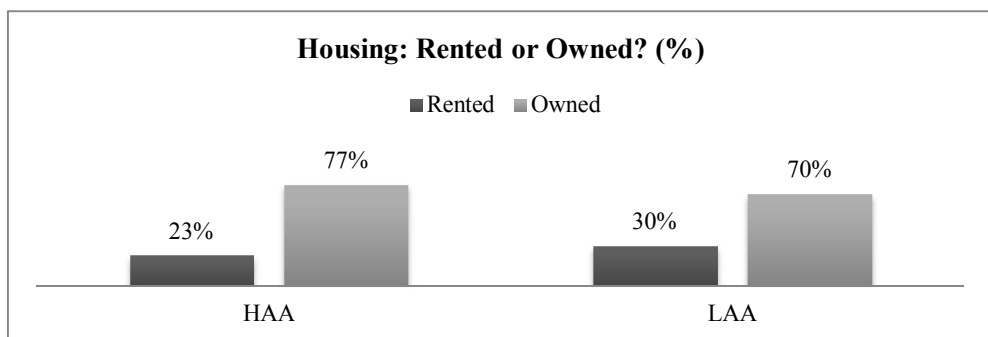
5.1.3 Type of Residence

Another question asked in the survey regarding family wealth was whether the housing was rented or owned, based on the understanding that real estate prices are steep and buying a house is a lifelong goal for many. Though HAA did tend to have a higher percentage of respondents who had lived in their own residence and not in rented property, the results were inconclusive as a

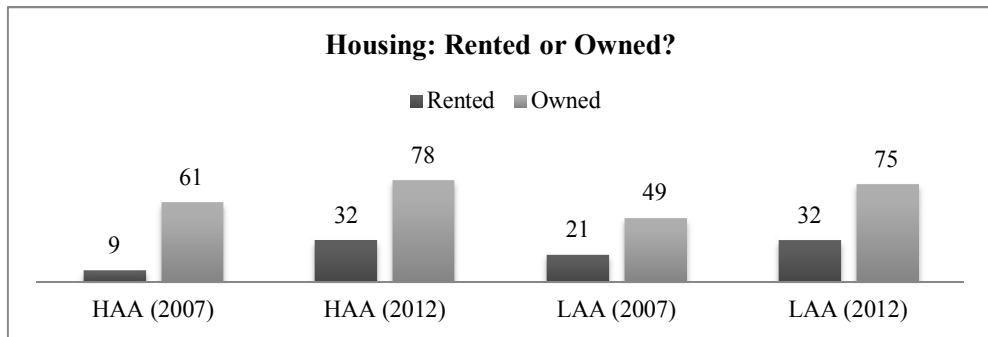
majority of both HAA (77%) and LAA (70%) students had lived in their own residence and 23% and 30% of HAA and LAA respondents, respectively, said their housing had been rented. The chi-square test also shows there is weak evidence of a relationship between Type of Residence and Academic Achievement (Chi-square = 2.731, df = 1, $p > 0.05$). [Table 3, page 21] One plausible explanation for why so many families said they owned their own residence is that by the time a child is in his or her final year of high school, most parents would have been married around 20 years which could be enough time to save up and buy instead of rent a place to live in.

		Rented or Owned		Total
		Rented	Owned	
Academic Achievement	LAA	54	123	177
	HAA	41	139	180
Total		95	262	357

<Table 6> Type of Residence and Academic Achievement: Count



<Graph 4> Rented or Owned Housing and Academic Achievement (%)

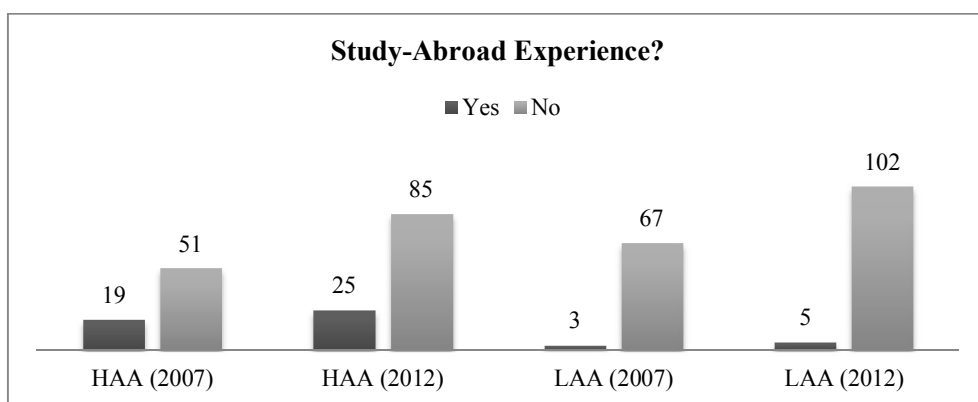


<Graph 5> Rented or Owned Housing and Academic Achievement by Year

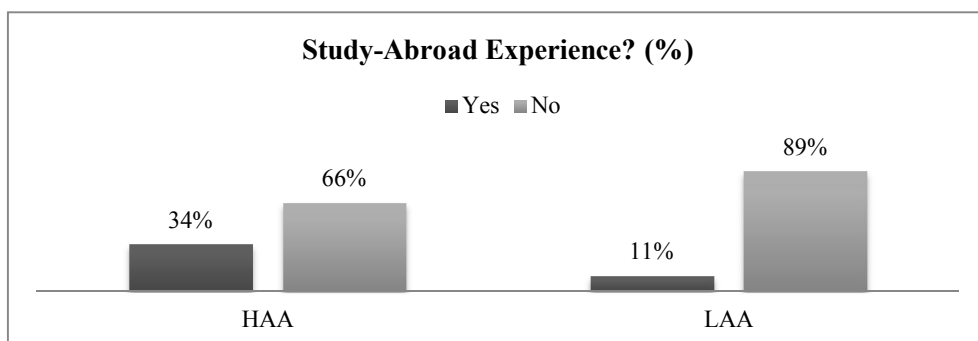
5.1.4 Study-Abroad Experience

The Study-Abroad Experience variable was added as a reflection of the increase in South Korean students participating in study-abroad programmes and schooling overseas prior to entering university as a sign of increased wealth compared to the past. When asked whether the respondents had received any schooling overseas before their final year of high school, 34% of the students enrolled at HAA said they had received some sort of schooling overseas or attended a language course abroad. This is a stark difference to the 11% of LAA respondents who said the same was true for them. There were further questions asked in 2007 and 2012 to supplement the hypothesis that study-abroad experience was positively related to academic success, but the questions in each of the surveys could not be compiled into one and are therefore not mentioned in this study. The regression model shows that 8% (Adjusted R Square = .085) of the total variability

in Study-Abroad Experience can be explained by Academic Achievement [Table 8, page 29] and there is a relationship between these two variables (chi-square = 30.304, df = 1, p < 0.001). [Table 3, page 21]



<Graph 6> Study-Abroad Experience and Academic Achievement by Year



<Graph 7> Study-Abroad Experience and Academic Achievement (%)

		Study Abroad Experience		Total
		No	Yes	
Academic Achievement	LAA	161	16	177
	HAA	121	59	180
Total		282	75	357

<Table 7> Study-Abroad Experience and Academic Achievement: Count

<Table 8> Model Summary of Dependent Variables Regressed on Academic Achievement (SPSS Analysis)

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate
Financial Capital	Perceived Income Bracket	.262 ^a	.069	.066	.64919
	Place of Residence	.262 ^a	.069	.066	.34673
	Type of Housing	.087 ^a	.008	.005	.44147
	Study Abroad Experience	.291 ^a	.085	.082	.39079
Human Capital	Father: Years of Education	.436 ^a	.190	.188	3.01641
	Mother: Years of Education	.441 ^a	.195	.192	3.01422
	Parents' Overseas Education	.185 ^a	.034	.032	.26495
Social Capital	Mother's Employment Status	.229 ^a	.052	.050	.88144
	Parent-Student Conversation	.105 ^a	.011	.008	.68209
	Number of Siblings	.061 ^a	.004	.001	.72192
	Birth Order	.155 ^a	.024	.021	1.22503
Personal Effort	Hours of Sleep (per day)	.036 ^a	.001	-.002	1.389
	Hagwon (Private Cram School) Fees (per month)	.220 ^a	.049	.046	246601.60138
	Gwawae (Private Tutoring) Fees (per month)	.091 ^a	.008	.006	220039.37330

a. Predictors: (Constant), HAA=1, LAA=0

<Table 9> ANOVA for Regression of Family and Non-Family Dependent Variables on Academic Achievement (SPSS Analysis)

Model			Sum of Squares	df	Mean Square	F	Sig.
Financial Capital	Perceived Income Bracket	Regression	11.033	1	11.033	26.178	.000 ^a
		Residual	149.612	355	.421		
		Total	160.644	356			
	Place of Residence	Regression	3.152	1	3.152	26.222	.000 ^a
		Residual	42.679	355	.120		
		Total	45.832	356			
	Type of Housing	Regression	.533	1	.533	2.737	.099 ^a
		Residual	69.187	355	.195		
		Total	69.720	356			
	Study Abroad Experience	Regression	5.029	1	5.029	32.929	.000 ^a
		Residual	54.215	355	.153		
		Total	59.244	356			
Human Capital	Father: Years of Education	Regression	759.289	1	759.289	83.450	.000 ^a
		Residual	3230.039	355	9.099		
		Total	3989.328	356			
	Mother: Years of Education	Regression	778.876	1	778.876	85.727	.000 ^a
		Residual	3225.359	355	9.086		
		Total	4004.235	356			
	Parents' Overseas Education	Regression	.884	1	.884	12.594	.000 ^a
		Residual	24.920	355	.070		
		Total	25.804	356			
Social Capital	Mother's Employment Status	Regression	15.277	1	15.277	19.663	.000 ^a
		Residual	275.815	355	.777		
		Total	291.092	356			

	Parent-Student Conversation	Regression	1.833	1	1.833	3.940	.048 ^a
		Residual	165.164	355	.465		
		Total	166.997	356			
	Number of Siblings	Regression	.690	1	.690	1.324	.251 ^a
		Residual	185.013	355	.521		
		Total	185.703	356			
	Birth Order	Regression	13.133	1	13.133	8.751	.003 ^a
		Residual	532.749	355	1.501		
		Total	545.882	356			
Personal Effort	Hours of Sleep (per day)	Regression	.867	1	.867	.450	.503 ^a
		Residual	684.679	355	1.929		
		Total	685.546	356			
	Hagwon Fees (per month)	Regression	1103268480273	1	1103268480273	18.143	.000 ^a
		Residual	21588384180791	355	60812349805.045		
		Total	22691652661065	356			
	Private Tutoring Fees (per month)	Regression	144678472519.0	1	144678472519.0	2.988	.085 ^a
		Residual	17188150659134	355	48417325800.377		
		Total	17332829131653	356			

a. Predictors: (Constant), HAA=1, LAA=0

<Table 10> Coefficients (Summary of SPSS Analysis)

Model			Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Financial Capital	Perceived Income Bracket	(Constant)	1.904	.049		39.019	.000
		Academic Achievement	.352	.069	.262	5.116	.172
	Place of Residence	(Constant)	.056	.026		2.168	.031
		Academic Achievement	.188	.037	.262	5.121	.000
	Type of Housing	(Constant)	.695	.033		20.942	.000
		Academic Achievement	.077	.047	.087	1.654	.099
	Study Abroad Experience	(Constant)	.090	.029		3.077	.002
		Academic Achievement	.237	.041	.291	5.738	.000
	Father: Years of Education	(Constant)	12.655	.227		55.818	.000
		Academic Achievement	2.917	.319	.436	9.135	.000
Human Capital	Mother: Years of Education	(Constant)	11.746	.227		51.843	.000
		Academic Achievement	2.954	.319	.441	9.259	.000
	Parents' Overseas Education	(Constant)	.028	.020		1.418	.157
		Academic Achievement	.100	.028	.185	3.549	.000
Social Capital	Mother's Employment Status	(Constant)	1.158	.066		17.481	.000
		Academic Achievement	-.414	.093	-.229	-4.434	.000
	Parent-Student Conversation	(Constant)	1.401	.051		27.329	.000
		Academic Achievement	.143	.072	.105	1.985	.048
	Number of Siblings	(Constant)	1.277	.054		23.531	.000
		Academic Achievement	-.088	.076	-.061	-1.151	.251
	Birth Order	(Constant)	2.017	.092		21.905	.000
		Academic Achievement	-.384	.130	-.155	-2.958	.003

Personal Effort	Hours of Sleep	(Constant)	6.085	.104		58.291	.000
		Academic Achievement	.099	.147	.036	.671	.503
	Hagwon Fees	(Constant)	295480.226	18535.711		15.941	.000
		Academic Achievement	111186.441	26104.003	.220	4.259	.000
	Private Tutoring Fees	(Constant)	284180.791	16539.172		17.182	.000
		Academic Achievement	40263.653	23292.260	.091	1.729	.085

5.2 Human Capital: Parents' Education Level

Respondents were asked about their mother's and father's education level to test the hypothesis that parents' education (human capital) is associated with a higher level of academic achievement. The answer choices for these questions were converted into years for data analysis. As expected, HAA parents tended to have a higher education level overall than their LAA counterparts. For both fathers and mothers, HAA students' parents had significantly higher education attainment levels. 78% of HAA fathers and 65% of HAA mothers had a 4-year university degree or higher, while the same was true for only 30% of LAA fathers and 14% of LAA mothers. Additionally, the survey participants were asked whether or not either of their parents had earned a higher degree (Bachelor's degree, Master's degree, Doctorate degree, etc) from overseas.

5.2.1 Father: Years of Education

Analysis shows that the fathers of high academic achievers (HAA respondents) are likely to have had 2.917 more years of formal education compared to the fathers of low academic achievers (LAA respondents). [Table 9, page 30] A prediction report compiled with the statistical software Minitab gives an idea of how many more years of education a student's father is likely to have had when

LAA=0 and HAA=1. [Table 12, pages 36-40] The average number of years an LAA father is likely to have received formal education is 13.099 years and an HAA father is expected to have had an average of 15.659 years of formal education, based on the data analysis. [Table 1, page 17; Table 11]

<Table 11> Parents' Average Years of Education

	LAA Average	HAA Average
Father: Years of Education	13.099 years	15.659 years
Mother: Years of Education	12.302 years	14.782 years

22.12% of the total variability in Father's Years of Education is explained by Academic Achievement. [Table 5, page 23] There is very strong evidence of a relationship between Father's Years of Education and Academic Achievement ($p < 0.001$). The same can be said of Mother's Years of Education and Academic Achievement ($p < 0.001$). A table of the counts and a combined graph of fathers' and mothers' education level illustrate the findings from the survey. [Table 13, page 41; Graph 8, page 42]

<Table 12> Prediction Report of Variables Regressed on Academic Achievement (Minitab)

X: Academic Achievement

Y: Perceived Income Bracket			Y: Residential Area		
<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>	<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>
-0.1	1.9049	(0.66670, 3.1431)	-0.1	0.038056	(-0.64716, 0.72327)
-0.05	1.9208	(0.68305, 3.1586)	-0.05	0.047437	(-0.63756, 0.73243)
0	1.9368	(0.69936, 3.1742)	0	0.056818	(-0.62797, 0.74161)
0.05	1.9527	(0.71563, 3.1898)	0.05	0.066199	(-0.61841, 0.75081)
0.1	1.9687	(0.73187, 3.2054)	0.1	0.075581	(-0.60886, 0.76002)
0.15	1.9846	(0.74808, 3.2211)	0.15	0.084962	(-0.59933, 0.76926)
0.2	2.0005	(0.76425, 3.2368)	0.2	0.094343	(-0.58983, 0.77851)
0.25	2.0165	(0.78038, 3.2526)	0.25	0.10372	(-0.58034, 0.78779)
0.3	2.0324	(0.79649, 3.2683)	0.3	0.11311	(-0.57087, 0.79708)
0.35	2.0484	(0.81255, 3.2842)	0.35	0.12249	(-0.56142, 0.80639)
0.4	2.0643	(0.82858, 3.3000)	0.4	0.13187	(-0.55199, 0.81572)
0.45	2.0802	(0.84458, 3.3159)	0.45	0.14125	(-0.54257, 0.82507)
0.5	2.0962	(0.86054, 3.3318)	0.5	0.15063	(-0.53318, 0.83444)
0.55	2.1121	(0.87647, 3.3477)	0.55	0.16001	(-0.52381, 0.84383)
0.6	2.1280	(0.89236, 3.3637)	0.6	0.16939	(-0.51445, 0.85324)
0.65	2.1440	(0.90822, 3.3797)	0.65	0.17878	(-0.50512, 0.86267)
0.7	2.1599	(0.92404, 3.3958)	0.7	0.18816	(-0.49580, 0.87211)
0.75	2.1759	(0.93983, 3.4119)	0.75	0.19754	(-0.48650, 0.88158)
0.8	2.1918	(0.95558, 3.4280)	0.8	0.20692	(-0.47722, 0.89106)
0.85	2.2077	(0.97130, 3.4442)	0.85	0.21630	(-0.46796, 0.90057)
0.9	2.2237	(0.98699, 3.4604)	0.9	0.22568	(-0.45872, 0.91009)
0.95	2.2396	(1.0026, 3.4766)	0.95	0.23506	(-0.44950, 0.91963)
1	2.2556	(1.0182, 3.4929)	1	0.24444	(-0.44030, 0.92919)
1.05	2.2715	(1.0338, 3.5092)	1.05	0.25383	(-0.43112, 0.93877)
1.1	2.2874	(1.0494, 3.5255)	1.1	0.26321	(-0.42196, 0.94837)

Y: Rented or Owned			Y: Study Abroad Experience		
<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>	<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>
-0.1	0.69592	(-0.17161, 1.5634)	-0.1	0.066657	(-0.70454, 0.83786)
-0.05	0.69939	(-0.16786, 1.5666)	-0.05	0.078526	(-0.69243, 0.84948)
0	0.70286	(-0.16413, 1.5698)	0	0.090395	(-0.68033, 0.86112)
0.05	0.70633	(-0.16043, 1.5731)	0.05	0.10226	(-0.66825, 0.87278)
0.1	0.70979	(-0.15675, 1.5763)	0.1	0.11413	(-0.65620, 0.88447)
0.15	0.71326	(-0.15310, 1.5796)	0.15	0.12600	(-0.64417, 0.89617)
0.2	0.71673	(-0.14947, 1.5829)	0.2	0.13787	(-0.63216, 0.90790)
0.25	0.72020	(-0.14586, 1.5863)	0.25	0.14974	(-0.62017, 0.91965)

0.3	0.72367	(-0.14228, 1.5896)	0.3	0.16161	(-0.60820, 0.93142)
0.35	0.72713	(-0.13872, 1.5930)	0.35	0.17348	(-0.59626, 0.94321)
0.4	0.73060	(-0.13519, 1.5964)	0.4	0.18535	(-0.58433, 0.95503)
0.45	0.73407	(-0.13168, 1.5998)	0.45	0.19722	(-0.57243, 0.96686)
0.5	0.73754	(-0.12820, 1.6033)	0.5	0.20909	(-0.56055, 0.97872)
0.55	0.74101	(-0.12474, 1.6068)	0.55	0.22096	(-0.54869, 0.99060)
0.6	0.74448	(-0.12130, 1.6103)	0.6	0.23282	(-0.53685, 1.0025)
0.65	0.74794	(-0.11789, 1.6138)	0.65	0.24469	(-0.52503, 1.0144)
0.7	0.75141	(-0.11451, 1.6173)	0.7	0.25656	(-0.51323, 1.0264)
0.75	0.75488	(-0.11114, 1.6209)	0.75	0.26843	(-0.50146, 1.0383)
0.8	0.75835	(-0.10781, 1.6245)	0.8	0.28030	(-0.48971, 1.0503)
0.85	0.76182	(-0.10449, 1.6281)	0.85	0.29217	(-0.47798, 1.0623)
0.9	0.76529	(-0.10120, 1.6318)	0.9	0.30404	(-0.46627, 1.0743)
0.95	0.76875	(-0.09794, 1.6354)	0.95	0.31591	(-0.45458, 1.0864)
1	0.77222	(-0.09470, 1.6391)	1	0.32778	(-0.44291, 1.0985)
1.05	0.77569	(-0.09148, 1.6429)	1.05	0.33965	(-0.43127, 1.1106)
1.1	0.77916	(-0.08829, 1.6466)	1.1	0.35152	(-0.41964, 1.1227)

Y: Father: Years of Education			Y: Mother: Years of Education		
X	Predicted Y	95% PI	X	Predicted Y	95% PI
-0.1	12.843	(8.1216, 17.565)	-0.1	12.054	(7.4868, 16.621)
-0.05	12.971	(8.2512, 17.692)	-0.05	12.178	(7.6123, 16.743)
0	13.099	(8.3806, 17.818)	0	12.302	(7.7378, 16.866)
0.05	13.227	(8.5099, 17.945)	0.05	12.426	(7.8631, 16.989)
0.1	13.355	(8.6391, 18.072)	0.1	12.550	(7.9882, 17.111)
0.15	13.483	(8.7681, 18.199)	0.15	12.674	(8.1133, 17.234)
0.2	13.611	(8.8970, 18.326)	0.2	12.798	(8.2382, 17.358)
0.25	13.739	(9.0258, 18.453)	0.25	12.922	(8.3629, 17.481)
0.3	13.867	(9.1544, 18.580)	0.3	13.046	(8.4876, 17.604)
0.35	13.995	(9.2829, 18.708)	0.35	13.170	(8.6121, 17.728)
0.4	14.123	(9.4112, 18.835)	0.4	13.294	(8.7365, 17.851)
0.45	14.251	(9.5395, 18.963)	0.45	13.418	(8.8607, 17.975)
0.5	14.379	(9.6675, 19.091)	0.5	13.542	(8.9848, 18.099)
0.55	14.507	(9.7955, 19.219)	0.55	13.666	(9.1088, 18.223)
0.6	14.635	(9.9233, 19.347)	0.6	13.790	(9.2327, 18.347)
0.65	14.763	(10.051, 19.476)	0.65	13.914	(9.3564, 18.472)
0.7	14.891	(10.179, 19.604)	0.7	14.038	(9.4800, 18.596)
0.75	15.019	(10.306, 19.733)	0.75	14.162	(9.6035, 18.721)
0.8	15.147	(10.433, 19.861)	0.8	14.286	(9.7268, 18.845)
0.85	15.275	(10.560, 19.990)	0.85	14.410	(9.8500, 18.970)
0.9	15.403	(10.687, 20.119)	0.9	14.534	(9.9731, 19.095)
0.95	15.531	(10.814, 20.248)	0.95	14.658	(10.096, 19.220)
1	15.659	(10.941, 20.377)	1	14.782	(10.219, 19.345)
1.05	15.787	(11.068, 20.507)	1.05	14.906	(10.342, 19.471)

1.1	15.915	(11.194, 20.636)	1.1	15.030	(10.464, 19.596)
Y: Parents' Overseas Education			Y: Mother's Employment Status		
<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>	<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>
-0.1	0.56847	(-8.6475, 9.7844)	-0.1	1.2286	(-0.50416, 2.9614)
-0.05	0.54844	(-8.6645, 9.7614)	-0.05	1.2068	(-0.52540, 2.9390)
0	0.52841	(-8.6818, 9.7386)	0	1.1850	(-0.54670, 2.9166)
0.05	0.50838	(-8.6994, 9.7161)	0.05	1.1632	(-0.56804, 2.8944)
0.1	0.48835	(-8.7172, 9.6939)	0.1	1.1413	(-0.58944, 2.8721)
0.15	0.46831	(-8.7353, 9.6719)	0.15	1.1195	(-0.61088, 2.8499)
0.2	0.44828	(-8.7536, 9.6502)	0.2	1.0977	(-0.63237, 2.8278)
0.25	0.42825	(-8.7722, 9.6287)	0.25	1.0759	(-0.65391, 2.8057)
0.3	0.40822	(-8.7910, 9.6075)	0.3	1.0541	(-0.67550, 2.7836)
0.35	0.38819	(-8.8101, 9.5865)	0.35	1.0322	(-0.69714, 2.7616)
0.4	0.36816	(-8.8295, 9.5658)	0.4	1.0104	(-0.71883, 2.7397)
0.45	0.34813	(-8.8491, 9.5454)	0.45	0.98861	(-0.74057, 2.7178)
0.5	0.32809	(-8.8690, 9.5252)	0.5	0.96679	(-0.76235, 2.6959)
0.55	0.30806	(-8.8891, 9.5052)	0.55	0.94497	(-0.78419, 2.6741)
0.6	0.28803	(-8.9095, 9.4856)	0.6	0.92315	(-0.80607, 2.6524)
0.65	0.26800	(-8.9301, 9.4661)	0.65	0.90133	(-0.82800, 2.6307)
0.7	0.24797	(-8.9510, 9.4470)	0.7	0.87951	(-0.84998, 2.6090)
0.75	0.22794	(-8.9722, 9.4281)	0.75	0.85770	(-0.87201, 2.5874)
0.8	0.20790	(-8.9936, 9.4094)	0.8	0.83588	(-0.89409, 2.5658)
0.85	0.18787	(-9.0153, 9.3910)	0.85	0.81406	(-0.91622, 2.5443)
0.9	0.16784	(-9.0372, 9.3729)	0.9	0.79224	(-0.93840, 2.5229)
0.95	0.14781	(-9.0594, 9.3550)	0.95	0.77042	(-0.96063, 2.5015)
1	0.12778	(-9.0819, 9.3374)	1	0.74860	(-0.98290, 2.4801)
1.05	0.10775	(-9.1046, 9.3201)	1.05	0.72678	(-1.0052, 2.4588)
1.1	0.087715	(-9.1275, 9.3030)	1.1	0.70497	(-1.0276, 2.4375)
Y: Parent-Student Conversation			Y: Number of Siblings		
<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>	<u>X</u>	<u>Predicted Y</u>	<u>95% PI</u>
-0.1	1.3868	(0.040732, 2.7329)	-0.1	1.3017	(-0.11429, 2.7177)
-0.05	1.3940	(0.048332, 2.7396)	-0.05	1.2966	(-0.11896, 2.7121)
0	1.4011	(0.055894, 2.7464)	0	1.2914	(-0.12366, 2.7065)
0.05	1.4083	(0.063419, 2.7532)	0.05	1.2863	(-0.12841, 2.7010)
0.1	1.4155	(0.070907, 2.7600)	0.1	1.2812	(-0.13319, 2.6955)
0.15	1.4226	(0.078357, 2.7669)	0.15	1.2760	(-0.13802, 2.6901)
0.2	1.4298	(0.085769, 2.7738)	0.2	1.2709	(-0.14288, 2.6847)
0.25	1.4370	(0.093144, 2.7808)	0.25	1.2658	(-0.14778, 2.6794)
0.3	1.4441	(0.10048, 2.7878)	0.3	1.2607	(-0.15273, 2.6741)
0.35	1.4513	(0.10778, 2.7948)	0.35	1.2555	(-0.15771, 2.6688)

0.4	1.4585	(0.11505, 2.8019)	0.4	1.2504	(-0.16273, 2.6636)
0.45	1.4656	(0.12227, 2.8090)	0.45	1.2453	(-0.16779, 2.6584)
0.5	1.4728	(0.12946, 2.8161)	0.5	1.2402	(-0.17289, 2.6532)
0.55	1.4800	(0.13661, 2.8233)	0.55	1.2350	(-0.17804, 2.6481)
0.6	1.4871	(0.14372, 2.8305)	0.6	1.2299	(-0.18322, 2.6430)
0.65	1.4943	(0.15080, 2.8378)	0.65	1.2248	(-0.18844, 2.6380)
0.7	1.5015	(0.15783, 2.8451)	0.7	1.2197	(-0.19370, 2.6330)
0.75	1.5086	(0.16483, 2.8524)	0.75	1.2145	(-0.19900, 2.6280)
0.8	1.5158	(0.17180, 2.8598)	0.8	1.2094	(-0.20434, 2.6231)
0.85	1.5229	(0.17872, 2.8672)	0.85	1.2043	(-0.20972, 2.6183)
0.9	1.5301	(0.18561, 2.8746)	0.9	1.1991	(-0.21514, 2.6134)
0.95	1.5373	(0.19246, 2.8821)	0.95	1.1940	(-0.22059, 2.6086)
1	1.5444	(0.19927, 2.8896)	1	1.1889	(-0.22609, 2.6039)
1.05	1.5516	(0.20605, 2.8972)	1.05	1.1838	(-0.23163, 2.5992)
1.1	1.5588	(0.21279, 2.9048)	1.1	1.1786	(-0.23721, 2.5945)

Y: Birth Order			Y: Hours of Sleep		
X	Predicted Y	95% PI	X	Predicted Y	95% PI
-0.1	2.2185	(-0.06052, 4.4974)	-0.1	6.3063	(4.1475, 8.4651)
-0.05	2.1976	(-0.08054, 4.4758)	-0.05	6.3023	(4.1442, 8.4604)
0	2.1768	(-0.10064, 4.4543)	0	6.2982	(4.1408, 8.4557)
0.05	2.1560	(-0.12080, 4.4328)	0.05	6.2942	(4.1374, 8.4511)
0.1	2.1352	(-0.14103, 4.4114)	0.1	6.2902	(4.1339, 8.4465)
0.15	2.1144	(-0.16133, 4.3901)	0.15	6.2862	(4.1304, 8.4420)
0.2	2.0936	(-0.18169, 4.3688)	0.2	6.2822	(4.1268, 8.4376)
0.25	2.0727	(-0.20213, 4.3476)	0.25	6.2782	(4.1231, 8.4332)
0.3	2.0519	(-0.22263, 4.3265)	0.3	6.2741	(4.1194, 8.4289)
0.35	2.0311	(-0.24320, 4.3054)	0.35	6.2701	(4.1156, 8.4247)
0.4	2.0103	(-0.26384, 4.2844)	0.4	6.2661	(4.1117, 8.4205)
0.45	1.9895	(-0.28455, 4.2635)	0.45	6.2621	(4.1078, 8.4163)
0.5	1.9687	(-0.30533, 4.2426)	0.5	6.2581	(4.1038, 8.4123)
0.55	1.9478	(-0.32617, 4.2218)	0.55	6.2540	(4.0998, 8.4083)
0.6	1.9270	(-0.34709, 4.2011)	0.6	6.2500	(4.0957, 8.4043)
0.65	1.9062	(-0.36807, 4.1805)	0.65	6.2460	(4.0915, 8.4005)
0.7	1.8854	(-0.38912, 4.1599)	0.7	6.2420	(4.0873, 8.3966)
0.75	1.8646	(-0.41024, 4.1394)	0.75	6.2380	(4.0830, 8.3929)
0.8	1.8437	(-0.43143, 4.1189)	0.8	6.2340	(4.0787, 8.3892)
0.85	1.8229	(-0.45269, 4.0985)	0.85	6.2299	(4.0743, 8.3856)
0.9	1.8021	(-0.47401, 4.0782)	0.9	6.2259	(4.0698, 8.3820)
0.95	1.7813	(-0.49540, 4.0580)	0.95	6.2219	(4.0653, 8.3785)
1	1.7605	(-0.51686, 4.0378)	1	6.2179	(4.0607, 8.3750)
1.05	1.7397	(-0.53839, 4.0177)	1.05	6.2139	(4.0561, 8.3716)
1.1	1.7188	(-0.55999, 3.9977)	1.1	6.2098	(4.0514, 8.3683)

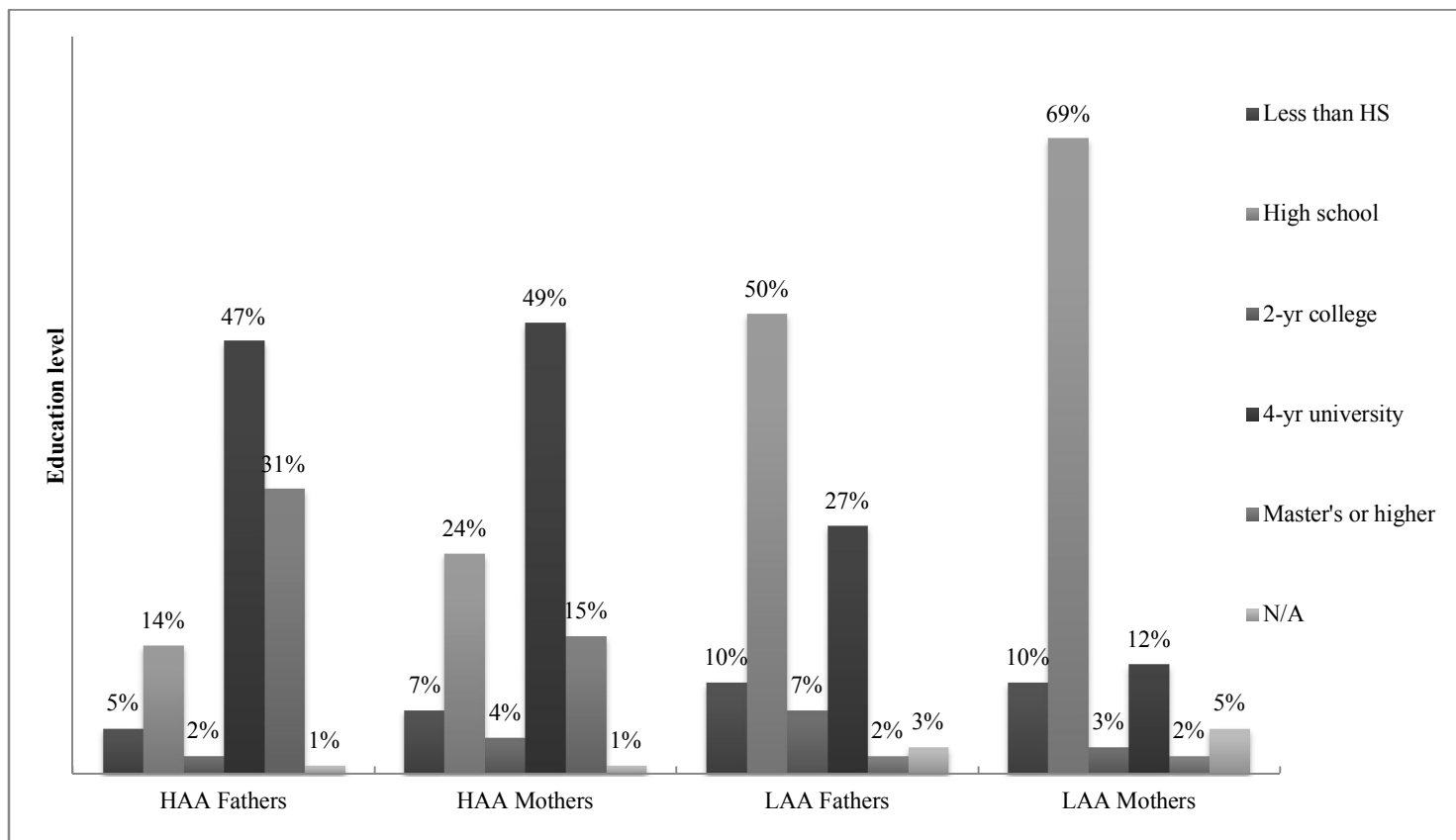
Y: Hagwon Fees			Y: Private Tutoring Fees		
X	Predicted Y	95% PI	X	Predicted Y	95% PI
-0.1	358887	(-35246, 753020)	-0.1	369296	(33156, 705436)
-0.05	364904	(-29070, 758878)	-0.05	370944	(34946, 706943)
0	370922	(-22907, 764751)	0	372593	(36724, 708462)
0.05	376940	(-16757, 770636)	0.05	374241	(38489, 709992)
0.1	382957	(-10621, 776536)	0.1	375889	(40243, 711535)
0.15	388975	(-4498.4, 782448)	0.15	377537	(41985, 713089)
0.2	394993	(1610.8, 788374)	0.2	379185	(43715, 714656)
0.25	401010	(7706.5, 794314)	0.25	380833	(45432, 716234)
0.3	407028	(13789, 800267)	0.3	382481	(47138, 717825)
0.35	413046	(19857, 806234)	0.35	384130	(48832, 719427)
0.4	419063	(25913, 812214)	0.4	385778	(50514, 721041)
0.45	425081	(31954, 818208)	0.45	387426	(52184, 722668)
0.5	431099	(37982, 824215)	0.5	389074	(53842, 724306)
0.55	437116	(43997, 830235)	0.55	390722	(55488, 725956)
0.6	443134	(49998, 836270)	0.6	392370	(57122, 727618)
0.65	449152	(55986, 842317)	0.65	394019	(58744, 729293)
0.7	455169	(61960, 848379)	0.7	395667	(60354, 730979)
0.75	461187	(67920, 854453)	0.75	397315	(61953, 732677)
0.8	467205	(73867, 860542)	0.8	398963	(63539, 734387)
0.85	473222	(79801, 866643)	0.85	400611	(65113, 736109)
0.9	479240	(85721, 872759)	0.9	402259	(66675, 737843)
0.95	485258	(91628, 878887)	0.95	403907	(68225, 739589)
1	491275	(97521, 885029)	1	405556	(69764, 741347)
1.05	497293	(103401, 891185)	1.05	407204	(71290, 743117)
1.1	503310	(109267, 897354)	1.1	408852	(72805, 744899)

Parents' education level (by year)							
	Less than HS	High school	2-yr college	4-yr university	Master's or higher	N/A	Sum
HAA fathers 07	7	14	1	31	17	0	70
HAA mothers 07	10	21	1	31	7	0	70
LAA fathers 07	6	41	3	17	2	1	70
LAA mothers 07	7	54	1	5	1	2	70
HAA fathers 12	2	12	2	54	39	1	110
HAA mothers 12	2	22	7	58	20	1	110
LAA fathers 12	12	47	10	31	2	5	107
LAA mothers 12	10	69	4	16	2	6	107

Parents' education level (total)							
	Less than HS	High school	2-yr college	4-yr university	Master's or higher	N/A	Sum
HAA fathers	9	26	3	85	56	1	180
HAA mothers	12	43	8	89	27	1	180
LAA fathers	18	88	13	48	4	6	177
LAA mothers	17	123	5	21	3	8	177

Parents' education level (%)							
	Less than HS	High school	2-yr college	4-yr university	Master's or higher	N/A	Sum
HAA fathers	5.00%	14.44%	1.67%	47.22%	31.11%	0.56%	100%
HAA mothers	6.67%	23.89%	4.44%	49.44%	15.00%	0.56%	100%
LAA fathers	10.17%	49.72%	7.34%	27.12%	2.26%	3.39%	100%
LAA mothers	9.60%	69.49%	2.82%	11.86%	1.69%	4.52%	100%

<Table 13> Parents' Education Level by Year, Total, and Percent



<Graph 8> Parents' Education Level and Academic Achievement

		Father: Years of Education						Total
		.00	Less than HS	High School	2-year College	4-year University	Master's, PhD	
Academic	LAA	6	18	88	13	48	4	177
Achievement	HAA	1	9	26	3	85	56	180
Total		7	27	114	16	133	60	357

<Table 14> Father: Years of Education and Academic Achievement (Count)

		Mother: Years of Education						Total
		.00	2.00	Less than HS	High School	2-year College	4-year University	Master's, PhD
Academic	LAA	8	1	17	122	5	21	3
Achievement	HAA	1	0	12	43	8	89	27
Total		9	1	29	165	13	110	30

<Table 15> Mother: Years of Education and Academic Achievement (Count)

5.2.2 Mother: Years of Education

The average number of years HAA mothers had been formally educated was 14.782 years and LAA mothers had received an average of 12.302 years of education. The proportion of the total variability in Mother's Years of Education explained by Academic Achievement is 22.18% and the model is statistically significant ($p < 0.001$). A drastic difference could be seen between the percentage of mothers who had received higher education. 64% of HAA mothers in

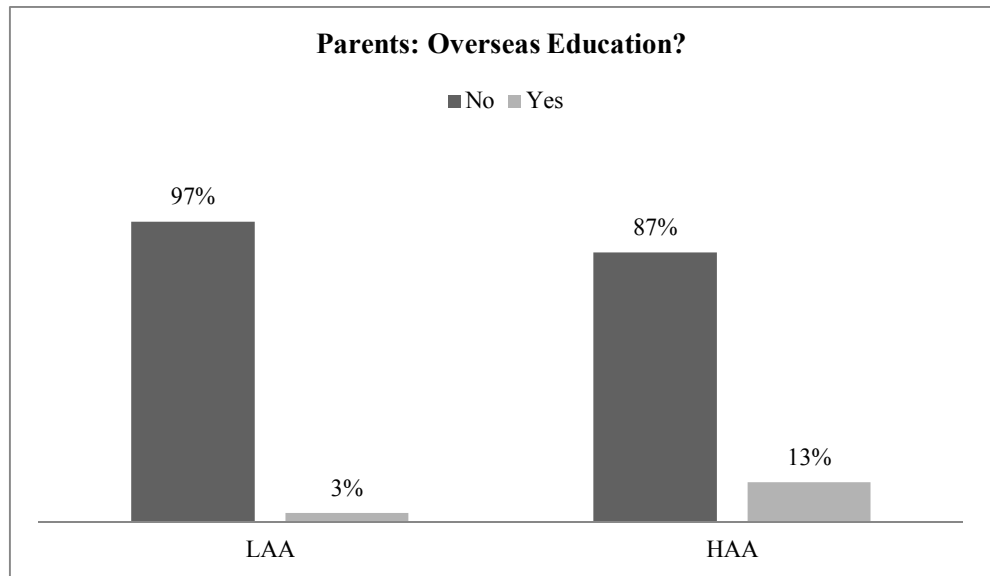
comparison with a mere 14% of LAA mothers had graduated from a 4-year university or higher. On the other side of the academic spectrum, only 31% of HAA mothers were high school educated or less than high school educated, as opposed to 79% of LAA mothers. [Graph 8, page 42]

5.2.3 Parents' Overseas Education

This variable also supported the hypothesis that Parents' Education is positively related to Academic Achievement. Although the correlation coefficient is only -0.04 which can be seen as statistically insignificant in itself, the comparison between HAA and LAA gives room for a different interpretation. 13% of HAA parents received a higher-education degree from overseas compared to only 3% of LAA parents. [Table 16, page 45; Graph 9, page 45] If this study had been to investigate only high achieving students, as is the case with many previous studies, this variable would not be seen as significant. However, when comparing the proportion of high achieving parents who studied overseas to that of low achieving parents, one can see that the difference is notable and could be a possible lead for future research. In this study, the difference observed in the survey results between HAA and LAA can be seen as valid.

<Table 16> Parents' Overseas Education and Academic Achievement

		Parents' Overseas Education		Total
		No	Yes	
Academic Achievement	LAA	172	5	177
	HAA	157	23	180
Total		329	28	357



<Graph 9> Parents: Overseas Education

5.3 Social Capital: Parental Involvement

To investigate the plausibility of the hypothesis that parental involvement is associated with a higher level of academic achievement, the academic survey used in this study primarily asked the respondents a number of questions regarding their mothers. Mothers' employment status was the key point of interest, but also

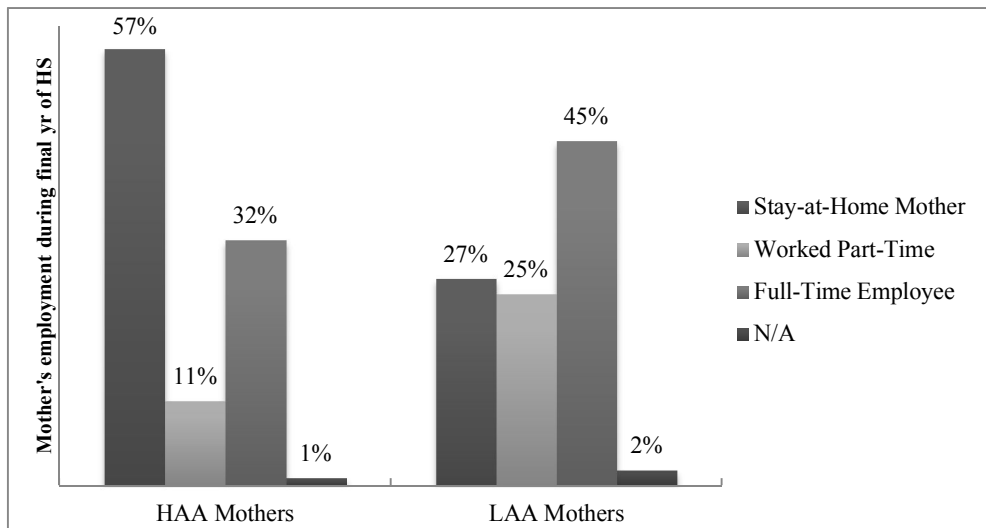
asked were questions such as how frequently the students discussed school life and test scores or prospective university life with their parents during their final year at high school. Also asked were questions regarding family size and number of siblings, based on previous studies that the smaller the size of the family, the more attention the student receives in order to achieve higher academic achievement.

5.3.1 Mother's Employment Status

For the sake of analysis, the data for this variable was treated as ordinal with the units 0, 1, 2 representing Stay-at-Home Mother, Worked Part-Time, and Full-Time Employee. [Table 1, page 17] A negative correlation ($r = -0.24$) exists between Mother's Employment Status and Academic Achievement ($HAA=1$, $LAA=0$). In other words, the higher the academic achievement, the more likely the mother will have stayed at home during the student's final year of high school. 57% of HAA mothers were stay-at-home mothers during this period, compared to only 27% of the LAA mothers. [Graph 10, page 47]

In the previous hypothesis, we saw that a large percentage of HAA mothers were highly educated, and yet this data analysis shows that most HAA mothers were unemployed during their child's final year of high school. This can be understood when one considers that in South Korea, it is common to find

highly-educated stay-at-home middle-aged mothers. Since this study did not touch upon the period before or after the participant's final year of high school, it is hard to say whether the mother temporarily decided to stay at home during this time or if she was unemployed regardless of her child's test-preparing high school years. However, what we can see is that a majority of HAA mothers had at least 16 years of education or a degree from a 4-year university or higher, and nearly half were also stay-at-home mothers. In the first category of financial capital, more HAA students tended to believe they belonged to the upper-middle income bracket than their LAA peers. Considering these survey results, a graph was drawn up between mothers' education level and employment status. [Graph 11, page 48]

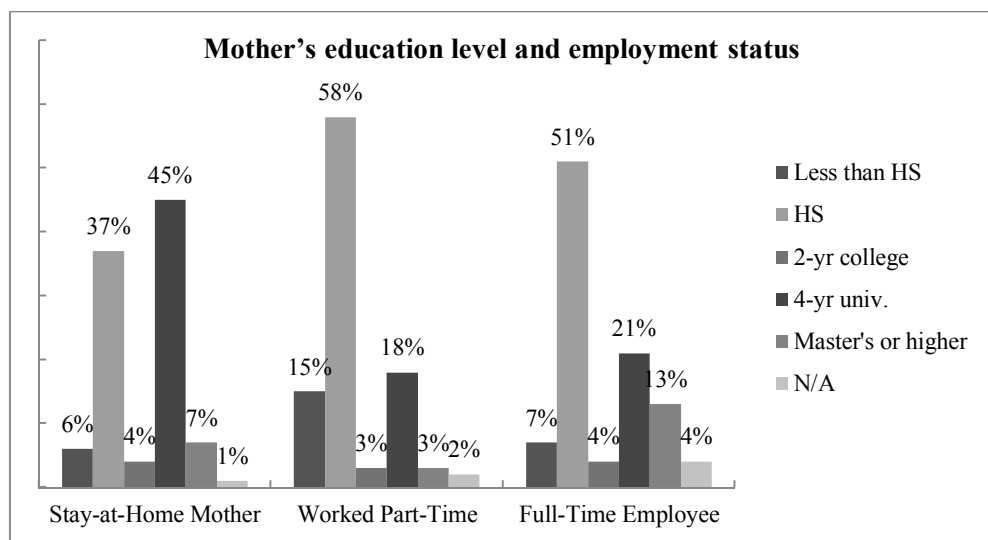


<Graph 10> Mother's Employment Status and Academic Achievement

Mother's employment (by year)					
	Stay-at-Home Mother	Worked Part-Time	Full-Time Employee	N/A	Sum
HAA mothers 07	44	8	18	0	70
LAA mothers 07	15	15	39	1	70
HAA mothers 12	58	12	39	1	110
LAA mothers 12	33	30	41	3	107

Maternal employment (total)					
	Stay-at-Home Mother	Worked Part-Time	Full-Time Employee	N/A	Sum
HAA mothers	102	20	57	1	180
LAA mothers	48	45	80	4	177

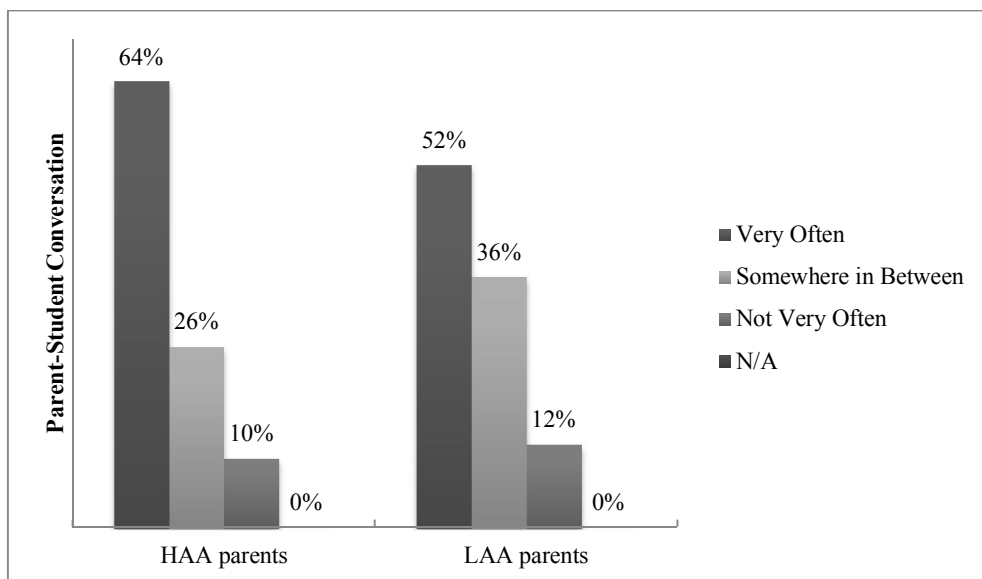
Maternal employment (%)					
	Stay-at-Home Mother	Worked Part-Time	Full-Time Employee	N/A	Sum
HAA mothers	56.67%	11.11%	31.67%	0.56%	100%
LAA mothers	27.12%	25.42%	45.20%	2.26%	100%



<Graph 11> Mother's Education Level and Employment Status

5.3.2 Parent-Student Conversation

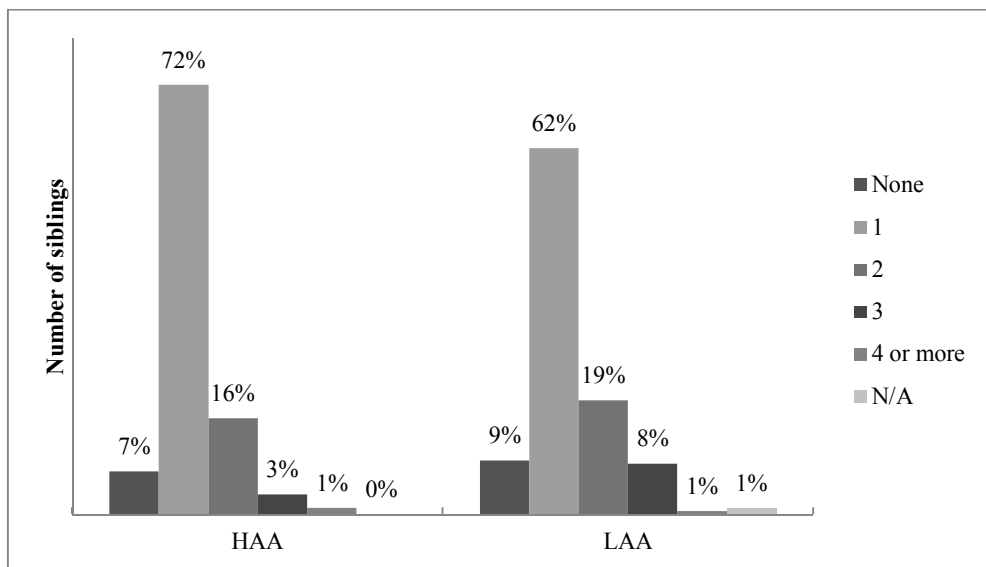
Regression analysis shows that there is little evidence of a relationship between Parent-Student Conversation and Academic Achievement (Chi-square = 5.921, $df = 2$, $p > 0.05$), however data comparison between the two groups of academic achievers shows that there is a pattern that can be drawn from the survey results. 64% of the students surveyed at HAA said they engaged in frequent conversations with their parents on school grades, while the same was true for 52% of LAA respondents. Despite the limitations of this otherwise in-depth question regarding parent-student conversation, the difference between higher and lower achievers and their frequencies for conversational interaction with parents can be seen as valid.



<Graph 12> Parent-Student Conversation and Academic Achievement

5.3.3 Number of Siblings

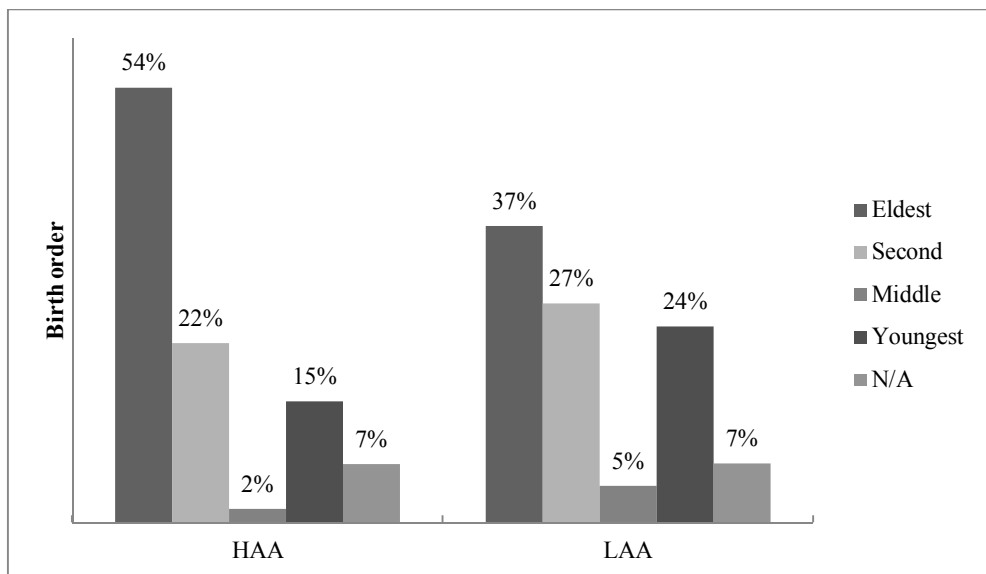
79% of the respondents from HAA had one or no siblings, compared to 71% of the LAA participants, while 20% of HAA students and 28% of LAA students had two or more siblings. Statistical analysis shows that there is a negative correlation between Number of Siblings and Academic Achievement but that the correlation coefficient is too small to call it significant. A further examination into the results reveals that the average number of siblings for HAA students is 1.189 and the average for LAA is 1.291 siblings. Still however, we can say that the higher the academic achievement, the more likely the student will have less siblings, which supports past literature on family size and academic achievement.



<Graph 13> Number of Siblings and Academic Achievement

5.3.4 Birth Order

The negative correlation ($r = -0.18$) between Academic Achievement and Birth Order indicates that when Academic Achievement increases, Birth Order tends to decrease. The average birth order for HAA is 1.76 and the average for LAA is 2.177. This indicates that it is more likely that the higher achieving student is the firstborn child in the family. Data analysis also shows that this model has explanatory power and there is evidence to reject the null hypothesis ($p < 0.05$).



<Graph 14> Birth Order and Academic Achievement

5.4 Personal Effort

The questions alluding to personal effort included hours of sleep and whether or not the respondent had received any type of private education outside of school. The assumption was personal effort could be reflected in the numbers of hours one slept during the exam-preparing final year of high school, and that the less private education (hagwon, private tutoring) one had received, the more self-study they would have engaged in. However, the results for hours of sleep were inconclusive and upon examining private education fees, it seemed that high achievers had spent more on private education than lower achievers, showing evidence that this particular model had no explanatory power. However, from the results, it was possible to say that this supported the financial capital proponent of this study.

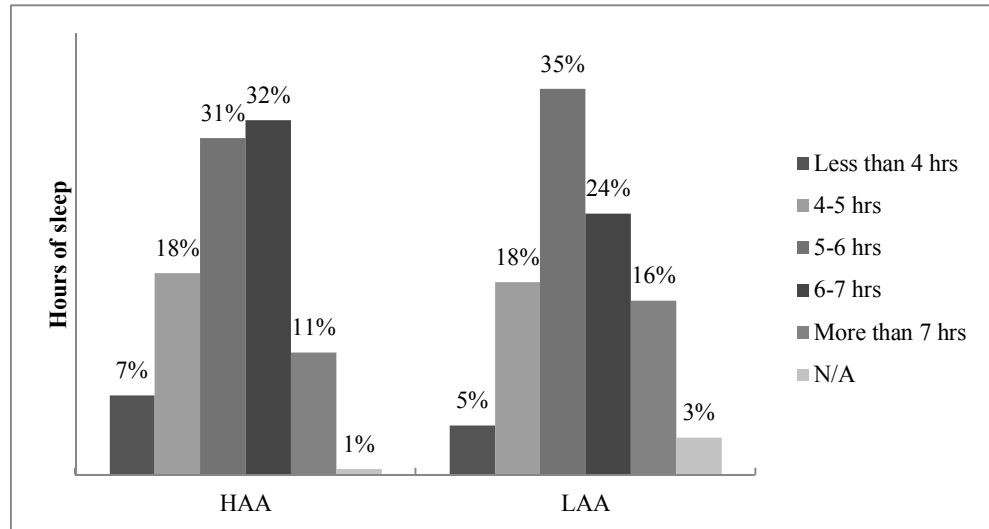
5.4.1 Hours of Sleep

The Chi-square test for Hours of Sleep and Academic Achievement show that there is very little evidence that the two are related (Chi-square = 9.112, $df = 5$, $p = 0.105$). The average HAA participant had slept 6.218 hours compared to 6.298 hours by the average LAA student during their final years of high school. Differences worth noting include the answer choices “4 or less hours of sleep”, “6-

7 hours of sleep” and “more than 7 hours of sleep” which were chosen by 7%, 32% and 11% of HAA students; and 5%, 24% and 16% of LAA participants, respectively. This shows that in some cases, higher achievers sleep less, in others, they sleep more than their LAA peers. Therefore this variable has been left as inconclusive in this study.

<Table 17> Hours of Sleep and Academic Achievement (Count)

		Hours of Sleep						Total
		N/A	4 Hours or Less	5 Hours	6 Hours	7 Hours	8 Hours or More	
Academic	LAA	6	8	31	62	42	28	177
Achievement	HAA	1	13	33	55	58	20	180
Total		7	21	64	117	100	48	357



<Graph 15> Hours of Sleep and Academic Achievement

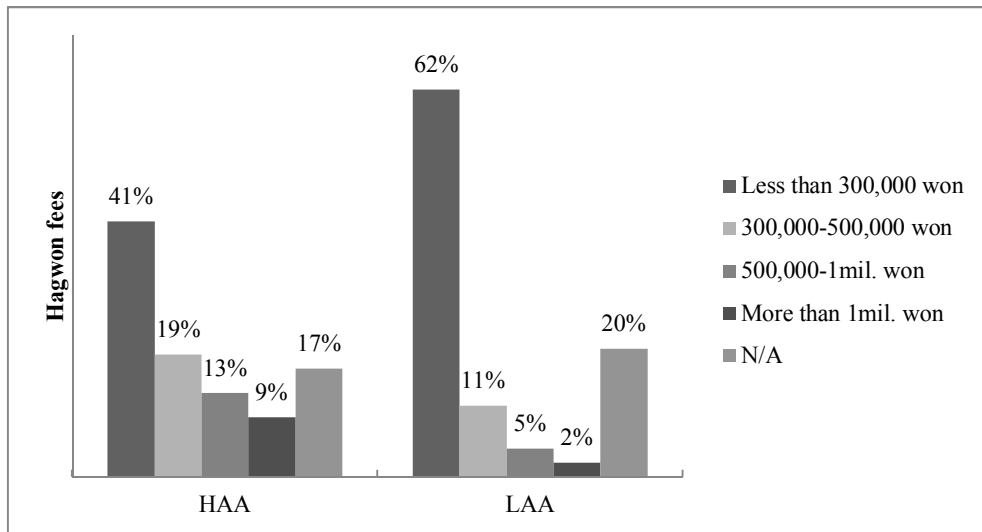
5.4.2 Hagwon (Private Cram School) Fees

The final two variables were asked in the survey regarding private education fees. Although this was not to see how much money was spent on private education, it provided evidence once again that family wealth is closely related to academic achievement for the South Korean student. HAA students spent an average of 491,275 won on private cram schools or “hagwon” during their final year of high school, according to the results of this survey, which is considerably more than the average 370,992 won spent on private cram schools by LAA students during their final year of high school.

A positive correlation ($r = 0.30$) shows that the higher the academic achievement, the more money is expected to be spent on hagwons. This contradicts the notion that personal effort alone can lead to higher academic achievement but adds support to the hypothesis that family wealth is positively associated with higher academic achievement. 17% and 20% of the respondents from HAA and LAA refused to answer this question.

<Table 18> Hagwon Fees and Academic Achievement (Count)

		Hagwon (Private Cram School) Fees					Total
		N/A	300000 KRW or Less	300000 to 500000 KRW	500000 to 1000000 KRW	1000000 KRW or More	
Academic Achievement	LAA	36	109	20	8	4	177
	HAA	31	73	35	24	17	180
Total		67	182	55	32	21	357



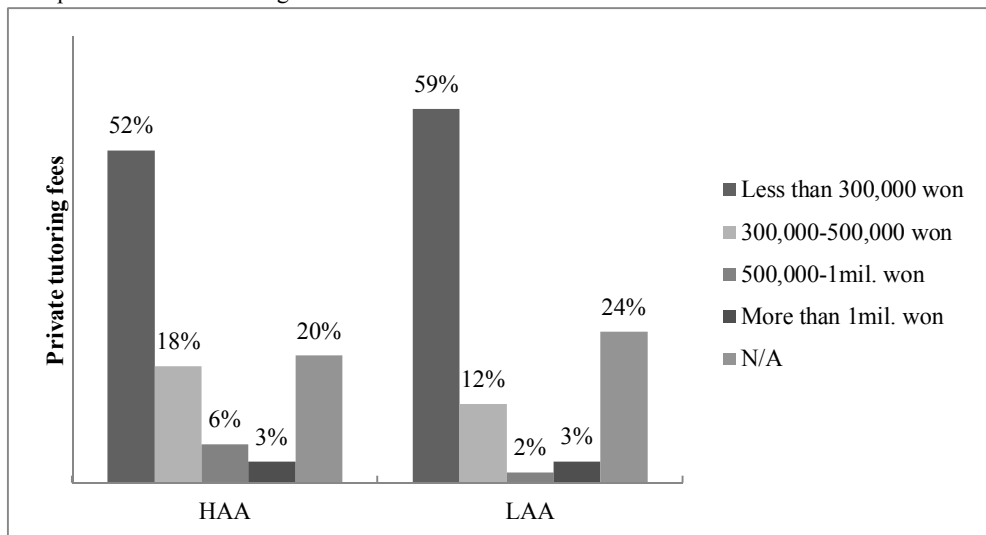
<Graph 16> Hagwon Fees and Academic Achievement

5.4.3 Private Tutoring Fees

Along with the previous variable on private education spending, survey participants were also asked how much money was spent per month on private tutoring (gwa-wae, 과외). 71% of LAA and 70% of HAA students had spent 500,000 won or less per month on private education and 3% of the participants from both schools spent more than 1 million won on private tutoring for their final year of high school. As was the case with the question on hagwon fees, 20% of HAA and 24% of LAA students refused to provide information regarding how much they paid for private tutoring.

Regression analysis states that this model is statistically insignificant ($p > 0.05$) but since the question was added not to find out how much money higher and lower achievers spend but to counter-interpret the results to find out if higher achievers had spent less on private education, it is worth looking at the results in more detail. The average spent on private tutoring for HAA students was 405,556 won and for LAA students it was 372,593 won. Again we can see that albeit by a small fraction, higher achievers spend more than lower achievers.

<Graph 17> Private Tutoring Fees and Academic Achievement



Chapter 6. Conclusion

6.1 Summary of Findings

The survey results of 357 undergraduate students in South Korea were analyzed in this study to gain an insight into the differences between higher and lower achievers that may have been overlooked in studies that deal with only one group of achievers. Findings show that South Korean high academic achiever is likely to be the firstborn child in the family, has a highly-educated father as well as a highly-educated mother who does not work during the student's final year of high school, and either one of the parents may have received higher education from overseas. The family may live in a lucrative neighborhood and belongs to the upper-middle income bracket, making them able to pay for costly private education. The financial stability may also be related to the mother not having to work. [Table 19, page 58]

<Table 19> Summary of Findings

	Variable	LAA Average	HAA Average	Statistical Significance	Correlation	Conclusion
H1: Family Wealth	Perceived Income Bracket	1.937	2.255	Significant	Positive	Valid
	Residential Area	0.057	0.244	Significant	Positive	Valid
	Rented or Owned	0.703	0.772	-	-	Inconclusive
	Study Abroad Experience	0.09	0.327	Significant	Positive	Valid
H2: Parents' Education	Father: Years of Education	13.099 years	15.659 years	Significant	Positive	Valid
	Mother: Years of Education	12.302 years	14.782 years	Significant	Positive	Valid
	Parents' Overseas Education	0.028	0.128	-	-	Somewhat Valid
H3: Parental Involvement	Mother's Employment Status	1.185	0.749	Significant	Negative	Valid
	Parent-Student Conversation	1.401	1.544	Significant	Positive	Valid
	Number of Siblings	1.291	1.189	-	-	Somewhat Valid
	Birth Order	2.177	1.76	Significant	Negative	Valid
H4: Personal Effort	Hours of Sleep	6.298 hours	6.218 hours	-	-	Inconclusive
	Hagwon Fees	370,922 KRW	491,275 KRW	Significant	Positive	H1
	Private Tutoring Fees	372,593 KRW	405,556 KRW	Significant	Positive	H1

6.2 Implications of Research

Despite the restrictions of sampling and small sample size, much evidence could be found through this academic survey of a relationship between family background and academic achievement by comparing higher and lower achievers. The same conclusions would not have been if this study had not included the comparison group. Many of the variables showed a weak correlation with academic achievement on its own, but when compared with the comparison group, it became evident that the results could be seen as valid. Although it cannot be proven in this research alone, there is strong evidence of the relationship between family wealth and high academic achievement. In South Korea, maternal unemployment can also be linked to family wealth when the unemployed mother is highly educated and is able to get employed but has opted to stay at home. It is not likely that a mother in a financially difficult family will do the same and not work. When considering the underlying relationship between each of the valid variables with wealth, one can say that family wealth is a big attribute to academic success. But considering the current decline of socio-economic mobility and the increasing difficulty for families in the lower-income bracket to move up the ladder, families of academically successful and financially stable parents are likely to continue to pass on academic success to the next generation while families that are less academically successful and financially unstable may have a hard time doing so.

6.3 Limitations & Recommendations for Future Research

There were several limitations to this study that may have been hindrances to reaching a more accurate analysis. First, the questionnaire used for this study was narrowed down to only the overlapping questions asked in 2007 and 2012, giving little room for a comprehensive understanding of the respondents' family backgrounds. A more detailed and longer survey could be used in future research to better understand the differences between higher and lower achievers in a similar setting. Second, a larger sample size and participants from more than two schools may make each of the findings more conclusive. Thirdly, more sophisticated data analysis in future research would allow for more in-depth interpretations of the result findings.

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국 문 초 록

한국 학생의 가족배경과 학업성취도에 관한 연구

최 수 진

본 연구는 한국 대학생 357명을 대상으로 2007년과 2012년 두 차례에 걸쳐 실시한 설문조사 결과를 토대로 가족배경과 학업성취에 대한 관계를 분석하는 데 주된 목적이 있다. 한국의 교육열기에 대한 이해에 기초하여, 기존의 가족배경과 학업성취도의 관계에 관한 연구와는 달리 높은 학업성취도를 대표하는 학교와 낮은 학업성취도의 학교에 각각 재학 중인 대학생의 가족배경을 비교하여 어떠한 차이가 있는지 살펴보았다. 2007년과 2012년에 실시한 설문조사는 한국 학생을 대상으로 하였고, 고등학교 3학년 재학시절에 관한 질문으로 설문이 이루어졌다. 가족배경은 기존 연구를 바탕으로 세 가지로 분류를 하였는데 금융 자본(financial capital), 인적 자본(human capital), 그리고 사회적 자본(social capital)이 그것이다. 이에 가족과는 무관한 개인의 노력이라는 별도의 항목을 만들어 총 네 가지 가설로 가족배경과 학업성취의 관계를 연구하였다. 분석 결과 가족배경의 세가지 자본 모두 학업성취도에 영향을 미친

다는 증거를 찾을 수 있었다. 한국의 높은 학업성취도를 보이는 학생은 첫째 자녀(맞이)일 가능성이 높으며, 고학력의 부모를 두고 있는 가운데 어머니는 일을 할 수 있음에도 불구하고 수험생 자녀를 두고 있을 경우 일을 하지 않을 수도 있다. 부모 중에 한 명이라도 외국에서 공부를 하고 왔을 가능성도 있으며, 설문조사의 결과에 의하면, 높은 학업성취도의 학생은 학원과 과외 등 사교육비의 지출도 낮은 학업성취도의 학생보다 많을 것으로 추측할 수 있을 것으로 나타났다.

주요어: 가족배경, 학업성취도, 금융 자본, 인적 자본, 사회적 자본, 한국

학번: 2005-22910