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Stratification in Extended Education Participation and its Implications for Education Inequality

Sang Hoon Bae, Eunwon Cho, Bo-Kyung Byun

Abstract: This study identified subgroups of elementary students based on similar patterns of participation in four different types of extended education in Korea. The study also investigated relationships between student patterns of extended education participation and their various demographic and socioeconomic characteristics, including residential location, parental education, and family income level. To achieve these aims, the study used latent profile analysis and logistic regression on a dataset of 18,186 students from 786 elementary schools provided by Statistics Korea. Results reveal five distinctive subgroups of students in terms of extended education participation: afterschool academic program users, shadow education users, moderate afterschool academic program users, ordinary users, and talent development seekers. Results also show that student socioeconomic and demographic characteristics are strongly associated with their classification into the above-mentioned subgroups. These findings signal the possibility that “educational stratification” based on student socioeconomic background may be occurring in the area of extended education.

Keywords: extended education, participation, stratification, educational equality

Introduction

Korea is well known for its people’s “education fever” (Seth, 2002): parents are willing to make great sacrifices to ensure their children’s success in education and life. Over the past five decades, this culture has intensified with the strong public belief that education is one of the most effective investments for individual “upward mobility” from one social level to another, and contributes to the reproduction of family socioeconomic status.

In reality, parents’ desire for their children’s education leads to incessant efforts to provide increased access to better education opportunities for their children. Given the greatly equalized and standardized regular curricular activities under the strictly mandated national curriculum framework, Korean parents seek alternative routes to differentiate educational opportunities and experiences of their children from those of their peers through “out-of-school time.” This is demonstrated by the ever-increasing participation rate in private supplementary tutoring, also known as “shadow education” (Bray, 1999). Most parents believe that attending “*hakwon* (for-profit private tutoring institutions)” will help their children prepare for tests and therefore achieve higher scores, paving the way for their children’s

admission to prestigious universities. Regardless of whether such private tutoring indeed enhances student learning, private supplementary tutoring is a dominant culture in Korean education. Furthermore, private tutoring is becoming increasingly normative and institutionalized in other East Asian countries, as well (Bae & Jeon, 2013; Bae & Kanefuji, 2018; Bray, 2013). From a public policy perspective, however, one serious problem concerning the widespread and increasing shadow education is that the accessibility and affordability of private tutoring services considerably differ across students from different socioeconomic classes and regions. Because the financial costs of private tutoring are relatively high, only students from wealthier families can afford to take part in such educational opportunities. Due to the lack of private tutors, students in rural areas have much more limited access to private tutoring compared to their peers in urban areas. In this regard, the ever-increasing participation in private tutoring is considered as a factor exacerbating educational equality in Korea.

A countermeasure to such problems has been presented in the form of school-based afterschool programs, defined as “a set of student-centered learning and development activities which are school-based operations but a not a part of the regular curriculum” (Ministry of Education and Science and Technology, 2012). These programs are generally run by school teachers or education professionals hired by schools, and are mostly implemented within school premises after regular school hours. More importantly, these afterschool programs are much more affordable than profit-seeking private tutoring services. Accordingly, school-based afterschool programs have become an alternative educational arrangement for students from lower income families and rural areas who have limited access to expensive private tutoring. In other words, school-based afterschool programs can be viewed as an education policy that promotes education equality in Korea.

As explained above, private supplementary tutoring and afterschool programs are the two main pillars of extended education in Korea. These two types of programs and activities are implemented with a variety of purposes. Private supplementary tutoring is provided by for-profit education services that are designed to increase students’ test performance. With the ever-intensifying competition among students, the private tutoring market in academic subjects has been continuously growing. The cost of private tutoring varies based on its performance in raising scores and/or sending students to prestigious universities. Meanwhile, afterschool programs for academic subjects are relatively cheaper and usually provided for students who cannot afford expensive private tutoring, as well as those who are left behind.

With the growing perception regarding the importance of extended education participation in students’ growth and development, an increasing number of talent development programs and activities are also provided after school hours at a variety of places. Some programs are offered by profit-seeking vendors, while others are provided as one of the school-based afterschool programs. Costs differ based on the quality of programs and activities.

With various extended education programs, Korean students are able to choose which programs to attend after school. While there has been little research to directly compare the quality of provided programs, anecdotal evidence and market rules suggest that the costs of programs are directly proportional to their quality. It is also assumed that socioeconomic status—for instance, family income level and residential location of students—greatly in-

fluences students' choice of programs. In other words, students from different socioeconomic backgrounds may have different levels of access to extended education and consume different types of extended education for different purposes. Such stratified patterns of extended education participation among different socioeconomic groups may have harmful effects on social and educational equality. In this regard, it is important to empirically examine whether distinct profiles of extended education participation exist among students.

Using Latent Profile Analyses (LPA), this study intends to identify groups of students categorized based on similar profiles of extended education participation. In other words, this study examined whether there are differing subpopulations of students who show differential pattern of participating in different types of extended education programs and activities. It also investigated whether different profiles or classes in extended education participation are associated with students' demographic and socioeconomic characteristics. The study's research questions are as follows:

1. What extended education participation patterns exist among Korean elementary school students?
2. What relationships exist between student socioeconomic and demographic characteristics and the patterns that students exhibit?

Literature Review

Defining Extended Education

Because definitions of "extended education" tend to vary across different country contexts, an examination of what constitutes as extended education is particularly fitting for the purposes of this study. Bae (2018) presents a conceptual framework to classify different types of learning opportunities based on (a) whether said opportunities were provided in school, and (b) whether these opportunities were provided during school hours. Based on this framework, extended education refers to all learning and development opportunities provided outside of school class time.

Such extended education can be further divided based on who is supplying these learning opportunities—namely, schools or for-profit actors. To begin with, there are afterschool programs—instruction and activities provided by schools, but outside regular school hours. This particular type of extended education is particularly prevalent in the U.S. and Korea (Bae, 2018; Bae & Jeon, 2013). Another major type of extended education takes the form of shadow education. Three characteristics set this particular type of education apart from others (Bray, 2012). According to Bray, shadow education is characterized by "supplementation," as it covers subjects which students already learned in school; it also denotes "privateness," as the providers of shadow education are for-profit actors from the private sphere; finally, it is "academic subject-focused," and therefore primarily aims to help increase students' academic performance—namely, test scores.

Yet another way of classifying extended education is based on its underlying causes and aims (Bae, 2018). Some extended education programs have been developed with the primary purpose of nurturing child development, whether in the form of academic compe-

tence, inter-personal skills, or various other forms of non-academic talent (Klerfelt & Haglund, 2014). Others were developed to address gaps in the standardized public school curriculum (Bae & Jeon, 2013). There are also types of extended education designed to cater to the various needs of society, such as after-school child care for the children of working parents or remedial language training programs for immigrant students (Dyson & Jones, 2014). Finally, some forms of extended education mostly aim to facilitate students' competition for upward social mobility, and thus serve as a vehicle for social reproduction (Bray, 2012).

Participation in Extended Education Worldwide

Due to varying definitions of extended education, it is difficult to directly compare levels of participation in extended education in different countries. The literature generally notes that shadow education has particularly been noticeable in the East Asian region, wherein it is a highly systematized industry (OECD, 2014). Lee and Shouse (2011) note that shadow education in these regions is often perceived as a prerequisite in the competition for social mobility. Bray (2012) notes that participation in shadow education is much lower in Western Europe and extremely low in Northern Europe. The literature generally shows, however, that shadow education is gradually increasing in countries across the world (OECD, 2014). Figure 1 of the Appendix compares student participation levels in out-of-school-time lessons with non-school teachers in countries across the world (OECD, 2011).

While most countries take a *laissez-faire* approach to the recent increase in shadow education, the Korean government has made active efforts over the past decades to reduce students' reliance on it (OECD, 2014). One such effort has been to introduce afterschool programs—for both academic development as well as general enrichment (activities not directly targeting academic achievement, such as the arts and sports)—in almost all K-12 institutions across the country. By doing so, the government hoped to reduce student demand for shadow education and address the widening achievement gap between privileged and less-privileged students (OECD, 2011). The number of Korean students participating in such afterschool programs has thus rapidly increased over the past decade. Worthy of note for the purposes of this paper is that participation in after-school programs is particularly high among elementary school students: as of 2018, approximately 59.3% of elementary school students in Korea (1.6 million) participated in afterschool programs (Ministry of Education, 2018). This ranks as the highest participation in within-school extended education among all K-12 students, in terms of both percentages of participation and number of students participated. Particularly worth note is that the afterschool programs offered by Korean elementary schools are much more diverse in nature, when compared to those offered by middle and high schools. As shown in Table 1, elementary schools offer a wide variety of programs with an academic focus (including Korean, math, science, and English); but a great number of programs with an enrichment focus are also offered (including music art, physical education, and computer skills).

Table 1. Number of Afterschool Programs, by School Level

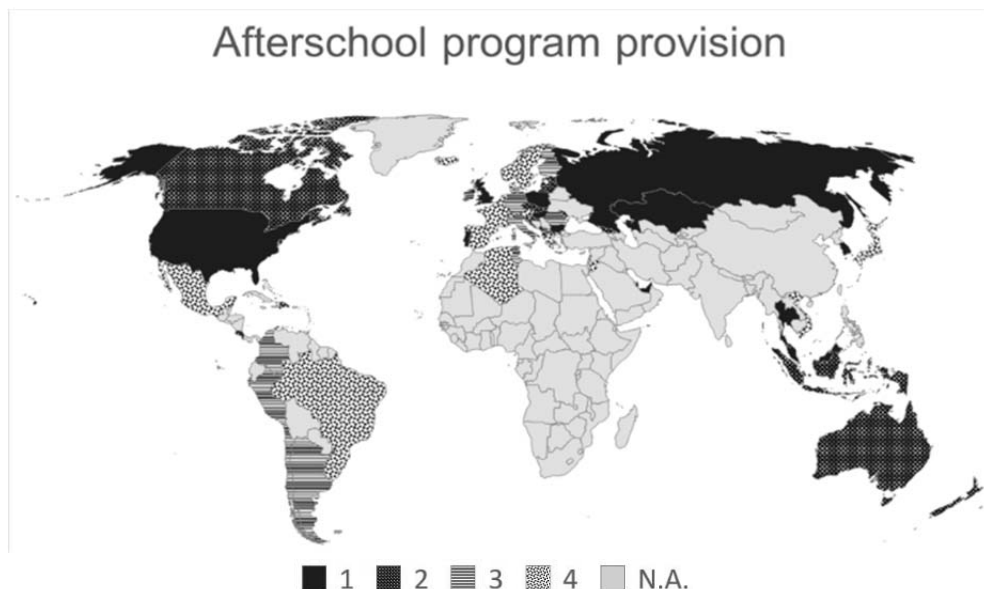
		Academic Programs						
		Korean	Math	Social	Science	English	Second Foreign Language	Etc.
Elementary School	Number of Programs	2,478	12,554	1,481	11,937	13,051	2,882	1,815
	Proportion	9.90	31.12	8.28	37.91	34.51	55.17	17.95
Middle School	Number of Programs	3,869	6,619	2,728	3,379	6,607	1,267	1,131
	Proportion	15.45	16.41	15.25	10.73	17.47	24.25	11.18
High School	Number of Programs	18,690	21,167	13,682	16,168	18,161	1,075	7,166
	Proportion	74.65	52.47	76.47	51.35	48.02	20.58	70.87
Total Number of Programs		25,037	40,340	17,891	31,484	37,819	5,224	10,112
		Enrichment programs						
		Music	Art	Physical Edu.	Computer Skills	Reading Essay	Etc.	
Elementary	Number of Programs	30,595	22,344	31,838	23,190	5,330	40,680	
	Proportion	75.73	84.54	68.07	87.89	75.22	82.81	
Middle	Number of Programs	7,375	2,547	10,060	1,403	742	4,266	
	Proportion	18.25	9.64	21.51	5.32	10.47	8.68	
High	Number of Programs	2,430	1,538	4,872	1,791	1,014	11,417	
	Proportion	6.01	5.82	10.42	6.79	14.31	8.50	
Total Number of Programs		40,400	26,429	46,770	26,384	7,086	49,123	

Note. Data from the Korean Ministry of Education (2018).

Cross-country comparisons of participation in afterschool programs presented in Table 2 of the Appendix reveal that participation rates in said programs are again particularly high in Korea. On the other hand, the U.S. and the U.K. show extended education program participation rates slightly above the OECD average. While many Western European and Scandinavian countries fell behind the OECD average in terms of provision of afterschool programs in the past, these countries have increasingly been offering more afterschool programs in recent years. Germany, for example, has seen a steady rise in all-day schools (StEG) over the past decade (Maaz, Baethge, Brugger, & Fussel, 2016).

A recent study by Bae, Park, Kwak, Cho, and Jung (2019) provides further insight into worldwide participation patterns in science-related afterschool programs, using PISA 2015 data.

Figure 1. Worldwide Distribution of Afterschool Program Provision, by Quartiles of PISA Science Scores



Note. Taken from Bae, Park, Kwak, Cho, & Jung (2019). PISA science scores of students from 54 PISA-participating countries and regions were divided into quartiles, with quartile 1 signifying the highest scores and quartile 4 signifying the lowest (see legend). Countries with no available data were marked as N.A.

Extended Education and its Impact on Social Equality

Impact of Shadow Education

The literature on the effects of shadow education on students' academic achievement shows mixed results; however, studies generally tend to lean toward the verdict that participating in shadow education is positively associated with improved academic performance. For example, Shin and Kim (2010) state that participation in shadow education and cost of participated program is positively associated with elementary and middle school students' academic performance in Korea. Kang and Lee (2010) also found that shadow education participation increases his or her academic performance, albeit with differential effect sizes for varying subjects. This relationship—namely, the positive association between participation in shadow education and academic performance—has also generally been observed across countries in Europe – e.g., Spain, Ireland, Poland, Greece; East Asia – e.g., Hong Kong-China; and Australia (OECD, 2011).

Impact of Afterschool Programs

While the literature on afterschool programs shows mixed results, the general consensus is that students who participate in said programs perform better than those who do not. This pertains to both studies conducted with an international focus (Fischer, Theis, & Züchner, 2014; Huang et al., 2007; Jenner, E. & Jenner, L., 2007; Lauer et al., 2006; OECD, 2014; Posner & Vandell, 1994, 1999; Vandell et al., 2007) as well as studies conducted specifically in Korea.

Jang (2018), for example, conducted a meta-analysis of the Korean literature to evaluate effects of afterschool program participation on student outcomes. He found that participating in afterschool programs were reported to have a positive effect on a variety of outcomes including academic achievement, cognitive development, and affective development. Bae, Kim, and Yang (2010), using data on extended education expenditure from Statistics Korea, also found similar results—reporting that an increase in afterschool program expenditure led to an increase in students' academic achievement, especially for students from low-income families. A number of other studies using data from different student age groups and divergent definitions of academic achievement have yielded similar results (Chae, Ihm, & Woo, 2009; Kim, 2010).

It is also important to note that afterschool program participation has been associated with improvement in cognitive and affective outcomes as well. Park, Ha, and Kim (2014) for example, using nationally representative data, reported that students who attended afterschool programs experienced a moderate but significant increase in academic self-efficacy and class engagement.

These findings suggest different meanings when viewed in light of who participate in shadow education and afterschool programs. Regardless of country, the literature shows that socioeconomically privileged students have the tendency to participate in shadow education; those from low-income families, rural areas, and other less-privileged backgrounds show higher participation in more affordable afterschool programs (OECD, 2014). This gives way to the hypothesis that shadow education may be increasing social inequality by raising the achievement of privileged and wealthier students. Afterschool programs, on the other hand, by providing less-privileged students with alternatives to prohibitively expensive shadow education, possibly have the potential to address social inequality. In this context, this study aims to better examine this possibility.

Methods

Data and Sample

This study aims to identify latent groups according to the pattern of extended education participation of Korean elementary students and explore family background variables that influence students' classification into respective groups. Data used for this analysis was drawn from the 2018 Survey on the Status of Private Tutoring provided by Statistics Korea. The survey was conducted across elementary, middle, and high school levels. The literature, as well as recent government statistics (see Table 1), emphasizes that students increas-

ingly flock toward extended education programs with a solely academic focus as they progress through middle and high school. Elementary school students, on the other hand, participate in a wide array of extended education programs for both academic and enrichment purposes. Because this study aims to examine divergent patterns of extended education participation, focusing on the elementary school population—which participates in a variety of different types of extended education, rather than all participating in one certain type—was deemed particularly fitting for this study. Moreover, a large body of literature points to the fact that gaps in academic achievement and development in early childhood years oft lead to larger gaps in later secondary education and beyond (Claessens & Engel, 2013). This provides further need to examine the elementary school population, as participation in different types of extended education may influence gaps in early childhood development. The sample used for this study thus consists of 18,186 students from 786 elementary schools. Table 2 shows the overall characteristics of the sample used for study analyses.

Table 2. Descriptive Statistics of Sample

		n	%
Region	Seoul	2,421	13.3
	Metropolitan	5,845	32.1
	Small town	6,352	24.9
	Rural area	3,568	19.6
Father's education level	Below middle-school graduate	75	0.4
	Middle-school graduate	219	1.2
	High-school graduate	5,371	29.5
	University graduate	10,386	57.1
	Above university graduate	2,135	11.7
Mother's education level	Below middle-school graduate	103	0.6
	Middle-school graduate	234	1.3
	High-school graduate	5,933	32.6
	University graduate	10,471	57.6
	Above university graduate	1,445	7.9
Family income (ten thousand Korean won)	Below 200	947	5.2
	200 – 400	6,190	34.0
	400 – 600	6,249	34.4
	600 – 800	2,632	14.5
	Over 800	2,168	11.9
Total		18,186	100.

Note. Correlation between the income variable and parental education was only moderate in the case of both father's education (correlation coefficient 0.336, $p < .001$) and mother's education (correlation coefficient 0.349, $p = < .001$). The study thus uses all three variables in its analyses.

Variables

Observed Variables

In order to measure the extent of a student's participation in extended education programs, this study used the variable of his or her expenditure to attend the programs. In other words, spending for extended education programs was used as a proxy variable for the degree of participation in a certain program.

Extended education participation in this study was divided into two types, namely private tutoring and school-based afterschool programs. These two types were in turn each divided into two categories based on the purpose of participation: "academic-focused programs" refer to programs aiming to increase students' academic achievement in general and test scores in particular), and "enrichment-focused programs" refer to activities not directly targeting academic achievement as their main goal such as the arts or sports. The unit of measurement for these variables is 10,000 Korean won per year. Meanwhile, private tutoring is generally much more expensive than school-based afterschool programs and therefore direct comparison of values may not provide meaningful information in light of the purpose of research—i.e., examining students' participation patterns or profiles in four types of extended education programs. For the purpose of comparison of four variables having different range of values, the study normalized data into the range from 1 to 10 using the min-max normalization technique. In addition, when interpreting Figure 3, it is necessary to take note of the relative differences in the values of each observed variable rather than the values themselves noted in the y axis.

Predictors

This study is intended to investigate the relation between SES variables of students and their participation pattern in extended education—differential profiles of extended education participation. SES variables of students were measured by residential location, father's education, mother's education, and family income level.

Residential location of students was coded into four dummy variables including Seoul, metropolitan area, small town, and rural area. Parental education level was measured by years of schooling. Finally, family income was coded into five dummy variables to be included via logistic regression analysis (below 2 million won=1, 2-4 million won=2, 4-6 million won=3, 6-8 million won=4, above 8 million won=5).

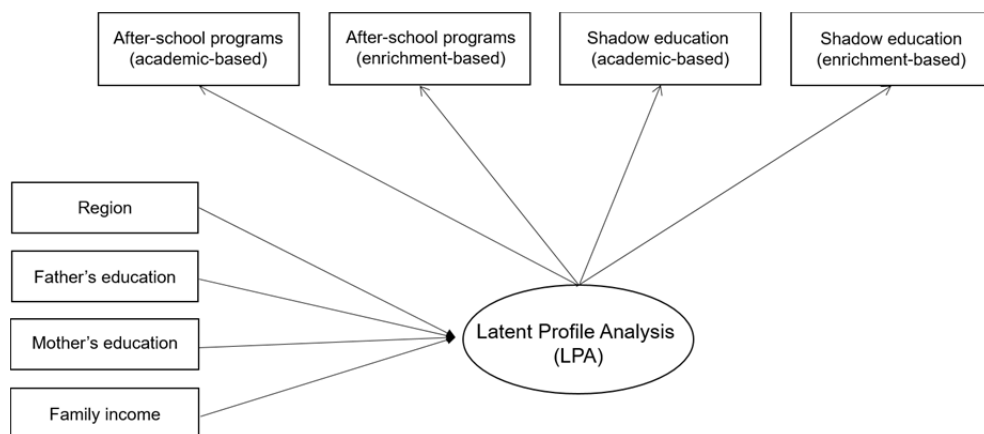
Analysis

The study used latent profile analysis (LPA) to divide elementary students attending extended education into separate groups, based on the similarities and characteristics of each group. LPA is a stochastic cluster analysis method that classifies potential subgroups around observers. Unlike cluster analysis by which the number of groups are arbitrarily determined by the researcher, LPA determines the number of groups by referring to statistical criteria and preventing classification errors by using probabilities (Magidson & Vermunt,

2002). The study gauged the best-fitting model using the following criteria: the Akaike information criteria (AIC), Bayesian information criterion (BIC), sample-size adjusted BIC (SABIC), parametric bootstrapped likelihood ratio test (BLRT), and the level of entropy. Indices of the AIC, BIC, and SABIC suggest that lower values indicate a better fit (Sclove, 1987). For accuracy of classification, a higher value of entropy close to 1 indicates that each individual belongs to the latent profiles with precise posterior probability, thereby presenting a good model fit (Clark, 2010). The p-value of BLRT was used for model comparison based on the likelihood difference between the k-class and the k-1 class model. A significant p-value for the k-class model means that the k-1 class model is better than the k-class model based on the log likelihood (McLachlan & Peel, 2000). In addition to statistical criteria, interpretability of the latent profile solutions was considered in identifying the final model. The conceptual framework for the latent profile analysis is found in Figure 2.

Thereafter, logistic regression analysis was performed to determine the socioeconomic characteristics of students that help predict their membership into respective groups. For this purpose, variables representing students' family background (residential location, father's education, mother's education, and family income) were selected as predictors. SPSS 25.0 was used for the above analysis.

Figure 2. Conceptual Framework for Latent Profile Analysis



Results

Latent Profile Analysis

LPA was employed to answer the first research question—what extended education participation patterns exist among Korean elementary school students? The study suggested fitted models which identify 3 to 5 latent classes, respectively.

Table 3. Fit Indices for Latent Profile Models

Model	AIC	BIC	SABIC	Entropy	LRT
Class 3	54984.98	55125.535	55068.33	0.935	0.000
Class 4	50828.56	51008.151	50935.06	0.906	0.000
Class 5	46376.11	46594.749	46505.77	0.916	0.002

Table 3 indicates that a 5-class model was most appropriate for the data. The SABIC, on the other hand, decreased with the addition of latent classes. Entropy for all latent classes exceeded 0.9, with the 3-class model closest to 1 at 0.935. LRT tests showed that all three classes were statistically significant. Finally, these statistics above reveal that the 5-class model better explains the data used in this study than the other two models. In other words, the 5-class model was found to be optimal. Table 4 below outlines descriptive statistics for each of these five latent groups produced by the 5-class model.

Table 4. Descriptive Statistics for Each Latent Class

	N (%)	Afterschool programs				Shadow education			
		Academic-based		Enrichment-based		Academic-based		Enrichment-based	
		M	SE	M	SE	M	SE	M	SE
Class 1	651 (3.6)	3.182	0.022	1.255	0.015	1.247	0.015	1.330	0.014
Class 2	1,145 (6.9)	1.087	0.006	1.108	0.006	2.411	0.011	1.520	0.015
Class 3	3,111 (16.7)	1.917	0.005	1.219	0.005	1.257	0.006	1.338	0.006
Class 4	12,263 (66.9)	1.041	0.001	1.095	0.002	1.248	0.003	1.268	0.003
Class 5	1,016 (5.9)	1.184	0.010	2.060	0.010	1.213	0.010	1.393	0.012

Note. The grand mean for all five classes is 3.651, and the corresponding standard error 0.006.

Figure 3 presents item-profile plots from the finalized 5-class model. As shown in the figure, five distinctive profiles of students in terms of extended education participation were found in elementary schools.

Class 1, which the study named “afterschool academic program users,” includes students who show particularly higher participation in academic-based afterschool programs compared to other groups. It appears that this group of students uses afterschool programs as a substitute for private tutoring to enhance their academic achievements. Presumably, this group includes low income students who cannot afford expensive private tutoring and/or rural students who have only the choice of the academic programs offered by the school.

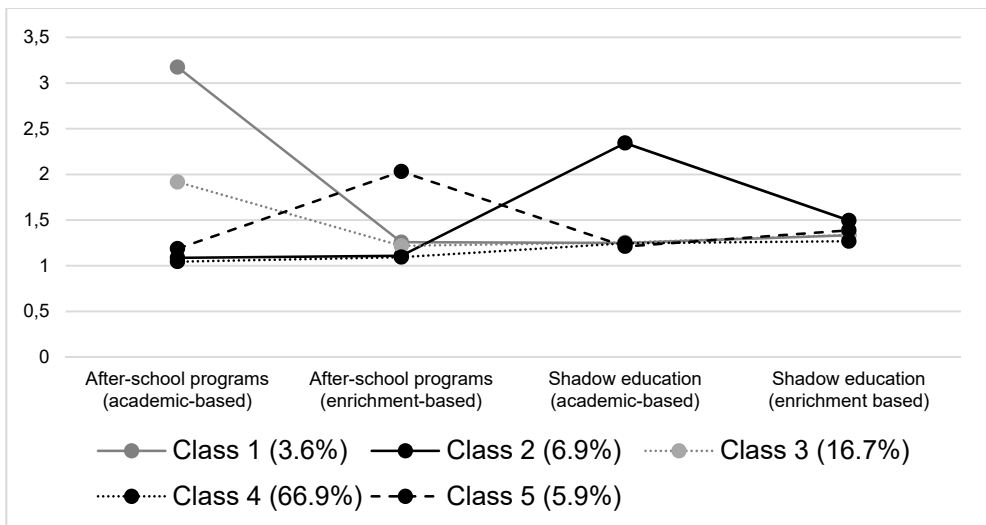
Class 2 was named “shadow education users.” This group includes students who tend to participate more in academic-based private supplementary tutoring as opposed to other comparable programs after the regular school hours. Considering the higher costs of private supplementary tutoring, it may be assumed that this group represents students from relatively affluent families and has strong motivation to promote academic achievement.

Class 3, named “moderate afterschool academic program users,” refers to those students who participate more in academic-based afterschool programs than shadow education, but whose participation levels are lower than those shown by Class 1 students. This class is the second group with the most number of students.

Class 4, named “ordinary users,” includes the majority of students in the study sample. This group took up 66.9% of all student samples.

Finally, class 5 was named “talent development seekers.” This latent group includes students who showed considerable participation in afterschool enrichment programs. It is notable that they are not much interested in other kind of extended education programs, particularly academic ones. This group could probably include lower grade students who are not pressured regarding academic achievement and just enroll in afterschool child-care programs.

Figure 3. Item-Profile Plot of Latent Groups



Note. Data was normalized into the range from 1 to 10 using the min-max normalization technique. As a result, it is necessary to take note of the relative differences in expenditure by each sector of extended education, as opposed to the normalized range noted in the y axis.

Logistic Regression Analysis

The study examined the extent SES variables of students relate to their group membership among these five latent classes by using logistic regression analysis. Logistic regression is useful in investigating the impact of independent variable on the odds ratio of the observed event of interest—in this study, student membership of a certain group. For the purpose of comparison, class 2 (shadow education users, the group of students who greatly participated in private supplementary tutoring) was set as the reference group and was compared with

all other latent groups. This choice of reference group was deemed particularly fitting for the purposes of this study: class 2 “shadow education users” can be considered the most socioeconomically privileged group of students, in light of the fact that shadow education tends to be the most expensive of all forms of extended education. As a result, this study believed that comparing this privileged group with other groups would provide particular insight into questions of educational equity—which constitutes the main purpose of this study. Table 5 shows the results of the logistic regression analysis.

First, concerning residential location, students who live in Seoul were set as the reference group. Results show that residential location was strongly associated with the subgroup of extended education participation a student belongs to. More specifically, students from Seoul were less likely than those from other regions to belong to class 1, 3, 4, and 5 when compared to the reference group, class 2. This shows that students from Seoul were more likely to attend private supplementary tutoring compared to other student groups. Particularly, students who lived in rural areas had a greater tendency than students from Seoul to fall into class 1 “afterschool academic programs users” ($OR = 2.030$, 95% CI: 1.315, 3.135). Students from rural areas also had a greater tendency than students from Seoul to fall in class 4 “ordinary users” ($OR = .178$, 95% CI: .140, .227). This reveals that students from rural areas tend to participate in afterschool academic programs while students from Seoul are more likely to participate in private supplementary tutoring.

Second, parental education level was generally found to be a significant predictor of student membership in different latent classes. Students with fathers with lower levels of education were more likely to fall into class 3 (high participation in school-based afterschool activities; $OR = 0.948$, 95% CI: .906, .991) or class 4 (ordinary users; $OR = .927$, 95% CI: .890, .967), as opposed to class 2 (high participation in shadow education). A similar pattern was found for students with mothers having lower levels of education. The lower the mother’s education level, the higher the tendency of the student’s participation in school-based afterschool programs (class 1 and class 3) as opposed to shadow education (class 2). Similarly, students with mothers with lower levels of education were more likely to fall into class 4 (ordinary users) compared to class 2 (students showing greater participation in shadow education).

Finally, family income significantly predicted students’ latent class membership. Students from lower-income families were more likely to fall into the “afterschool academic program users” group (class 1; $OR = .579$, 95% CI: .562, .638), the “moderate afterschool academic program users” group (class 3; $OR = .527$, 95% CI: .492, .565), and the “ordinary users” group (class 4; $OR = .489$, 95% CI: .458, .521) as opposed to shadow education provided outside school (class 2). Considering the lower cost of school-based afterschool programs, it seems natural that more low-income students attend afterschool programs than expensive private tutoring.

Table 5. Logistic Regression Predicting Membership into Latent Classes by Students' Socioeconomic Characteristics

	Class 1			Class 3			Class 4			Class 5		
	<i>B</i>	<i>S.E.</i>	<i>Exp.(B)</i>	<i>B</i>	<i>S.E.</i>	<i>Exp.(B)</i>	<i>B</i>	<i>S.E.</i>	<i>Exp.(B)</i>	<i>B</i>	<i>S.E.</i>	<i>Exp.(B)</i>
Region (ref.: Seoul)												
Metropolitan	-0.908***	0.215	0.403	-0.624***	0.138	0.536	0.858**	0.120	2.359	-0.389*	0.172	0.678
Small town	0.040	0.135	1.041	-0.611***	0.097	0.543	-1.126***	0.088	0.324	-0.628***	0.119	0.534
Rural area	0.708**	0.222	2.030	0.028	0.143	1.028	-1.724***	0.124	0.178	0.007	0.180	1.007
Father's education	-0.031	0.031	0.969	-0.054*	0.023	0.948	-0.075***	0.210	0.927	-0.017	0.028	0.983
Mother's education	-0.106**	0.031	0.900	-0.077**	0.023	0.926	-0.143***	0.022	0.866	-0.027	0.028	0.973
Family income	-0.546***	0.049	0.579	-0.640***	0.036	0.527	-0.716***	0.033	0.489	-0.563***	0.044	0.569

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Reference group for all logistic regression models set to Class 2; *S.E.* = standard error; *Exp.(B)* = odds ratio.

Discussion

With increasing parental interest in their children's education and intensified competition among students, extended education in Korea—especially those with an academic focus—is on the steady rise. The types and purpose of extended education are also expanding rapidly to cater to diverse students' varying needs. The majority of extended education programs can nonetheless be classified into two categories based on who provides these programs: private tutoring is provided by profit-seeking institutions and professionals outside the school, while afterschool programs are primarily offered by schools. These two categories can again be divided into two streams in terms of their underlying purpose – namely, academic programs with a remedial or excellence focus or enrichment activities for student talent development. Programs greatly differ not only in quality but also accessibility and affordability. In this context, examining participant profiles in the types of extended education programs they attend and their purpose for participation is critical as an initial step in discussing the issue of equality in the area of extended education.

The purpose of this study was twofold: it first aimed to identify categories of elementary students based on their profiles of participation in four different types of extended education. The study then examined relationships between different subgroups of extended education participation and students' socioeconomic characteristics including region of residence, parental education level, and family income. To achieve this aim, the study used latent profile analysis and logistic regression with elementary student data drawn from the 2018 Survey on the Status of Private Tutoring provided by Statistics Korea.

Results revealed five distinctive subgroups of students based on their patterns of participation in various forms of extended education—namely (a) afterschool academic program

users, (b) shadow education users, (c) moderate afterschool academic program users, (d) low participants, and (e) talent development seekers. More than a half of the sample fell into the “low participants” group, which refers to students with little interest in any form of extended education. Examining the above-mentioned subgroups suggests that the major purpose of participating in extended education involves raising academic achievement or test performance, whether through private tutoring or school-based afterschool programs.

Interesting to note is that student socioeconomic characteristics strongly influenced classification into each subgroup. To be more specific, students residing in Seoul were more likely to participate in shadow education as opposed to school-based afterschool programs; students from rural areas, on the other hand, showed higher participation in the latter. Parental education level was also associated with student membership in different subgroups, as students with parents with lower levels of education displayed higher rates of participation in school-based afterschool activities as opposed to shadow education. In addition, students from low-income families were more likely to attend school-based afterschool programs rather than shadow education provided outside school.

Taken together, these findings imply that school-based afterschool academic programs may serve as affordable alternatives for expensive types of shadow education. This holds particularly true in the case of low-income students who cannot afford expensive private tutoring and students from rural areas who are much more limited in access to private tutoring academies. This conceptualization of school-based afterschool programs as a form of “compensatory” education for disadvantaged students is in line with the literature from other countries. For example, a U.S.-based study by Bennett, Lutz, and Jayaram (2012) suggested that schools contribute to reducing the social class gap in extracurricular activity participation by providing affordable activities in which students from low-income backgrounds can easily participate. They also asserted that without school-based afterschool programs, social class gaps in extracurricular activity participation would be even wider. In this sense, school-based afterschool programs can thus be regarded as an effective means to improve educational equality in terms of access.

Viewed in a different perspective, however, findings that student socioeconomic background is highly associated with his or her pattern of extended education participation are cause for concern. This study found that students from low-income families or who had parents with lower levels of education were more likely to attend school-based afterschool programs as opposed to more expensive, specialized forms of shadow education; all the while, a large body of literature attests to the effectiveness of shadow education in improving students’ academic performance, which in turn provides them with an advantage in future social mobility (Kang & Lee, 2010; OECD, 2011; Shin & Kim, 2010). These results indicate that students from less privileged backgrounds are disadvantaged not only in terms of the type of school they attend and the quality of school education they receive, but also in terms of the type and quality of extended education they receive after school hours. This study thus contributes to the literature on educational inequality in that it highlights how “stratification” can take place not only through schools but also outside of school through the realm of extended education.

Educational stratification refers to the differential allocation and attainment of educational opportunities based on student sociodemographic backgrounds (Mare, 1981). It is

likely that such trends of stratification in extended education are particularly prevalent in a country such as Korea. With its highly standardized education system, parents from privileged backgrounds are strongly motivated to secure an advantage for their children by providing them with specialized educational opportunities outside the boundaries of the standardized school curriculum. That said, however, similar trends have also been noted in countries outside of Korea. For example, studies have examined how child participation in out-of-school time activities tends to be stratified along socioeconomic lines, and how participation in these different activities influence educational outcomes in countries including the U.S. (Stevens, 2007; Weininger, Lareau, & Conley, 2015), Taiwan (Shi & Yi, 2014), and Germany (den Besten, 2010). These findings suggest that stratification in extended education is steadily becoming a widespread phenomenon around the world. While school-based afterschool programs will admittedly not likely be able to compete with the most expensive, specialized forms of shadow education, school-based programs—with the right planning and administration—have the potential to reduce extant gaps among different social classes in access to quality programs and activities after regular school hours.

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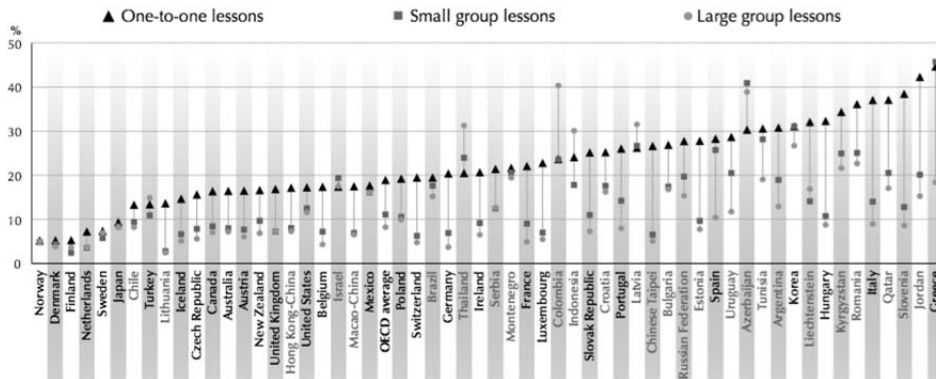
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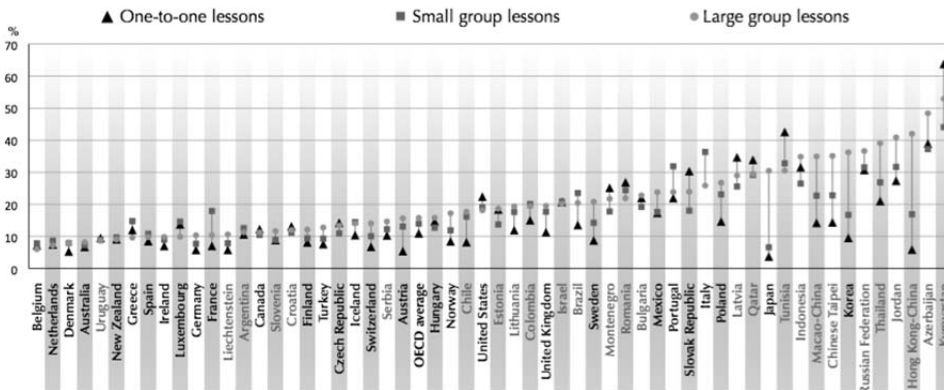
Appendix

Figure 1. Percentage of students taking out-of-school-time lessons with non-school teachers, by type of out-of-school-time lessons



Countries are ranked in ascending order of the percentage of students taking out-of-school-time one-to-one lessons.
 Source: OECD PISA Database 2006, Table 2.3.

Figure 2. Percentage of students taking out-of-school-time lessons with school teachers, by type of out-of-school-time lessons



Countries are ranked in ascending order of the percentage of students taking out-of-school-time large group lessons.
 Source: OECD PISA Database 2006, Table 2.3.