Japanese and Korean High Schools and Students in Comparative Perspective

Hyunjoon Park

Background

Japan and South Korea (hereafter Korea), along with other East Asian countries such as Hong Kong and Taiwan, have received serious attention from American educational researchers and policy makers with their students' considerably high levels of academic achievement (Stevenson & Stigler, 1992; US Department of Education, 1987). The extraordinary performance of Japanese and Korean students has been documented in various comparative studies of achievement. In the Third International Mathematics and Science Study (TIMSS 95), for instance, 4th- and 8th graders from Japan and Korea, along with those from Hong Kong and Singapore, markedly outperformed their peers in other nations in both math and science. In 1999, TIMSS was repeated for 8th graders in 38 countries and again it was the five East Asian countries (including Taiwan, which did not participate in TIMSS 95) that occupied the top positions. In 2000–2001, the Organization for Economic Cooperation and Development (OECD) administered a new international survey, the PISA (Program for International Student Assessment), of literacy skills in reading, mathematics, and science among 15-year-old students. Among students from more than 40 countries in PISA, Korean students, along with Japanese and Hong Kong students, showed the highest mean scores in mathematical and scientific literacy.

The outstanding performance of East Asian students, along with relatively poor performance of American students, has led to two extreme reactions from American educational policy makers and researchers. On the one hand, a group of people have considered the relatively poorer achievement of American students as evidence of weakness of American education and thus have argued significant reforms of American education, following East Asian model of education. But as Baker and LeTendre (2005) show, such argument for American education reform is often not based on systematic examinations of international data but draws a hasty conclusion only on the basis of simple comparisons of countries' average scores.

H. Park (✉)
Department of Sociology, University of Pennsylvania, Philadelphia, PA, USA
e-mail: hypark@sas.upenn.edu

J. Dronkers (ed.), *Quality and Inequality of Education*,
DOI 10.1007/978-90-481-3993-4_10,

On the other hand, the opposite reaction to the considerably higher performance of East Asian education has simply disregarded the fact, arguing that the results from international surveys of student achievement do not show real capacity of educational system. Emphasizing creativity as a key aspect of capacity of educational systems, this perspective is critical to the higher average performance of East Asian countries as simply reflecting drill, memorization, and standardized testing that suppress students' creativity and questioning (Hanushek, 2002). It is assumed that American education should be better in encouraging creativity and innovative thinking among students, which are more important than mere rote learning and memorization widely practiced in East Asia, despite American students' lower performance in international tests of academic achievement. It is worth reciting the remarks by Bracey who represents this perspective from Hanushek (2002: 17):

> We should think more than twice before we tinker too much with an educational system that encourages questioning. We won't benefit from one that idolizes high test scores. It could put our very competitiveness as a nation at risk.

Is it fair to criticize East Asian education as drill, rote learning, and memorization and consider American education as encouraging creativity and innovation? In fact, the lack of creativity, the emphasis on rote learning and memorization, and heavy reliance on standardized testing have long been the most common criticisms on Japanese and Korean education not only from American educators but also from Asian educators themselves (Stevenson, 1991). Despite ample evidence against such typical view on Japanese (especially elementary) education (Stevenson & Stigler, 1992), the common critical view on East Asian education still remains strong in literature. This may be in part due to Western audience's attention to Japanese and Korean high school students who have to spend long hours of study to prepare for university entrance exams.

In reality, however, surprisingly we have very limited knowledge on Japanese and Korean high schools and their students. Most research on student's academic achievement and school differentiation in this aspect of educational outcomes was conducted at the elementary or middle school levels. For instance, TIMSS, which has been widely used by comparative education researchers to compare academic achievement of students and their schools across many countries, surveyed only students in elementary schools (3rd–4th graders) and middle schools (7th–8th graders) for Japan and Korea. Therefore, our knowledge on distributions of student performance within and between schools in Japan and Korea is limited primarily to elementary and middle school levels.

The exclusive focus on elementary and middle school students by previous literature is important to bear in mind because high school education in Japan and Korea is quite distinctive from elementary and middle school education. There is no between-school tracking through elementary to middle schools until students go to different types of high schools after graduation from middle schools (usually after 9th grade). Apparently, the degree of school differences should be greater at the high school level than at elementary or middle school levels. The knowledge on elementary and middle schools cannot be simply generalized to high schools given significant changes in structural features of high school education.

An important consequence for the lack of research on academic achievement of high school students in Japan and Korea is the neglect of literature on significant differences between Japanese and Korean education. Driven by similarly extraordinary performance of Japanese and Korean elementary and middle school students, Western literature tends to treat Japanese and Korean education as the same one. This treatment is more or less fair given the considerably similar features of elementary and middle school education between two countries. But, by doing so, literature does not appreciate important differences between Japan and Korea at the high school level. As will be described in more detail in the later section of Academic vs. Vocational schools, two countries have distinctive selection processes of students into high schools, which should result in significant differences between the two countries in the levels of school differentiation.

Of course, a great deal of studies have examined the transition of students from middle school to high school in Japan and Korea and explored the determinants of attending specific types of high schools and the consequences of attending such schools for opportunities of post-secondary education (Stevenson & Baker, 1992; LeTendre, 1996; Ono, 2001; Kim & Phang, 2005). However, the focus of those studies was exclusively on educational *attainment* as an outcome of education. As researchers recognize, data on academic *achievement* of high school students, which is another important aspect of educational outcomes distinct from educational attainment, are rare in Japan and Korea (Kariya & Rosenbaum, 1999). Despite the cumulated knowledge on the processes through which Japanese and Korean students proceed from middle schools through high schools to colleges, we know little about how their academic skills and knowledge are distributed within and between schools.

Given the surprising lack of knowledge on educational achievement of Japanese and Korean high schools and their students, this chapter aims to offer a closer look at educational performance of Japanese and Korean high school students and their distributions within and between schools. Although descriptive in nature, this chapter offers empirical evidence against some stereotyped criticisms on Japanese and Korean education and provides detailed descriptions of distribution of student performance within and between schools especially in comparisons to other Western countries.

Rote Learning, Memorization, and Lack of Creativity?

Japanese and Korean education has been commonly criticized as rote learning, memorization, and lack of creativity:

> Exclusive reliance on standardized testing for educational assessment also forces administrators and teachers to emphasize rote learning and memorization, which ultimately inhibits creativity (Kim, 2005: 342).
>
> . . .the students' need to acquire a large amount of information for the examinations is believed to reduce students' creativity. Indeed, the most common criticism made by Asians of their school is that the schools are not preparing students to think creatively (Stevenson, 1991: 115–116).

However, this widespread stereotyped criticism on Japanese and Korean education has never been empirically tested because data that contain measures of student's creativity across a nation are rare. Although not still perfect to test this argument, we now have better data than academic achievement data to validate the argument to some extent. In 2003, PISA assessed 15-year-old students' problem-solving skills in addition to reading, mathematics, and science literacy skills. With problem-solving skills, PISA aimed to test "each student's ability to understand a problem situation, identify relevant information or constraints, represent possible alternatives, or solution paths, select a solution strategy, solve the problem, check or reflect on the solution, and communicate the solution and reasoning behind it" (OECD, 2004: 46). In short, the assessment of problem-solving skills was designed to measure student's capability to solve problems in real-life situations by applying their accumulated knowledge and skills beyond a specific area of school curriculum. Although problem solving may not still indicate student's creativity, it is student's capacity to "move among different, but sometimes related, representations and to exhibit a certain degree of flexibility in the ways in which they access, manage, evaluate, and reflect on information" (OECD, 2004: 27). As such, problem-solving skills represent student's capacity, which is not acquired simply by rote learning, memorization, and repetition of school subjects. Therefore, by comparing the overall levels of problem-solving skills of Japanese and Korean students to those of Western students, we can assess the criticism on Japanese and Korean education better than we could by examining data on academic achievement such as mathematics and science test scores.

Table 1 presents mean scores and standard deviations for five selected countries including Japan and Korea. PISA measured proficiency in problem solving in a scale that has a mean score of 500 points and a standard deviation of 100 points across OECD students. Therefore, the average performance level of Japanese (547) and Korean (550) students (also Finnish students) is about 50 points (i.e., half standard deviation) higher than the OECD mean performance level. Indeed, Korea shows the highest mean score among all 40 countries in PISA, which is not statistically different from the mean scores of Japan and Finland. Students in the United States show the mean performance level below the OECD mean, while German students are located between top performers in Finland, Japan, and Korea and poor performers in the United States.

Table 1 National mean performance on the problem-solving scale

	Mean	Standard deviation
Finland	548	82
Germany	513	95
Japan	547	105
Korea	550	86
United States	477	98
OECD average	500	100

The comparatively higher level of problem-solving skills among Japanese and Korean students is not consistent with the common criticism that East Asian education exclusively relies on rote learning and memorization and East Asian students' higher performance in various international comparisons of academic achievement results from repetition and numerous experiences of taking test. Among students from 40 countries, Japanese and Korean 15-year-old students show the highest level of capacity of interconnecting information and applying the cumulated knowledge to solve real-situation problems. Again, this result may not prove that Japanese and Korean students are creative. But it is certainly inconsistent with the stereotyped image of Japanese and Korean students who practice drill, rote learning, and memorization.

Making Talented Students Mediocre?

Another related criticism on Japanese and Korean education is that their standardized education, which does not allow diverse teaching methods and within-school ability grouping, does not support further development of talented students. It is argued that talented students in standardized education in Japan and Korea do not have opportunities of advanced learning but have to suffer from uniform curriculum and pace of instruction designed for average students (Stevenson, 1991).

This criticism leads us to expect that top performers in Japan and Korea should not exceed or even should do worse than top performers in other countries. In other words, highly standardized education in Japan and Korea should increase their overall mean performance but suppress further development of talented students. In fact, emphasizing 'quality' education, Korean government has recently pursued reforms of secondary education, of which variation in education according to ability, and special education for 'gifted' students are major components (Ministry of Education and Human Resources Development, 2004). The assumption is that the long-standing standardized system should not meet diverse needs among students with different levels of ability. The government is particularly concerned about the relative lack of talented students who can be important human resources for economic growth of country.

As the case for other countries as well, however, the demand for educational reforms is not based upon serious examinations of strength and weakness of current system. To what extent is it true that standardized educational system in Korea suffers from the lack of talented students? How do top performers in Korea fare to top performers in other countries? Given that the PISA data were collected in 2003, Korean government's reform for diverse education, which primarily began in early 2000 but has not been substantially implemented yet, should not have significantly affected the result for PISA. We can consider the result in PISA as reflecting mostly the long-standing tradition of standardized education in Korea.

In order to assess the claim that top students in Japan and Korea are not as advanced as top students in other countries, it is necessary to examine the distributions of problem-solving skills acros countries only among students at the top

end of distribution. Figure 1 presents students' scores at the top 10 percentile within each country. Comparisons among top students across five countries indicate that top students in Japan and Korea outperform top students in Germany and the United States in problem solving. Specifically, students at the top 10 percentile (i.e., 90 percentile) in the US distribution score 599 points, while students at the top 10 percentile in the Korean distribution score 652 points. Given that the one standard deviation of scores on the problem-soving scale is 100 points, the difference of 53 points between Korean students and American students at the top 10 percentile is striking. Students at the top 10 percentile in Korea score higher than students at the top 10 percentile in Germany (628). Japanese students (667 points) at the top 10 percentile score even higher than Korean students at the 10 percentile. In short, Fig. 1 reveals that Japan and Korea show higher levels of performance, than Germany and the United States, in problem solving not only among average students (as seen in Table 1 for average scores) but also among those at the top end of distribution.

Although not directly relevant for testing the argument that Japanese and Korean educational systems make talented student mediocre, it is worthwhile to briefly mention competencies of problem solving among low-achieving students as well. As described above, the upper part of the distribution shows slightly higher performance of Japanese high-performing students than Korean high-performing students. However, the lower part of the distribution shows the opposite case: Korean low-performing students do better in problem solving than Japanese low-performing students (the score at the bottom 10 percentile is 415 points in Japan and 443 points in Korea). The relatively poor performance of Japanese low-perfoming students is evident, especially when compared to Finnish students. Although Japanese students at the top 10 percentile even outperfom Finnish students at the top 10 percentile, Japanese students at the bottom 10 percentile score 35 points lower than their Finnish counterparts. The relatively large gap in performance between high-performing and low-perfoming students in Japan is reflected in the relatively large standard deviation (105 points) of the problem-solving score as already seen in Table 1 (larger than 98 points in the United States). Comparably standard deviations in Finland and Korea are only 82 and 86 points, respectively.

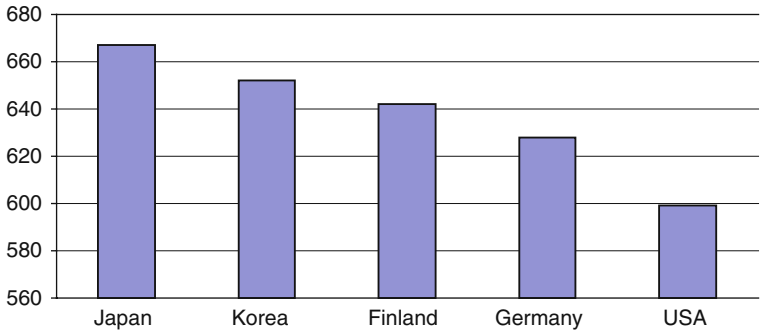

Fig. 1 Cumulative distributions of students' problem-solving skills by country

Effects of Family Socioeconomic Status

In order to assess the extent to which family socioeconomic status (SES) is related to student's problem-solving skills, I conducted the Ordinary Least Squares (OLS) regression analysis for each country, separately. In the model, student's score on the problem-solving scale is predicted by a measure of family SES, the Index of Economic, Social, and Cultural Status available in the PISA 2003 dataset (OECD, 2004). The index was created by a Principle Component Analysis using the following variables: (1) parental occupation measured by socioeconomic index of occupational status (Ganzeboom, De Graaf, & Treiman, 1992); (2) parental education as measured by years of schooling completed; (3) number of books at home; and (4) home possessions of educational resources (e.g., a desk, a computer, or educational software) and cultural resources (e.g., classical literature, books of poetry, or works of arts). As such, this index of economic, social, and cultural status taps the overall level of family SES. The index was scaled to have a mean of 0 and a standard deviation of 1 across OECD students. Higher values of the index indicate levels of family SES higher than the OECD average.

Figure 2 presents the relationship between family SES and the score on the problem-solving scale in each country. The bar for each country stretches from the bottom 10 percentile in the distribution of family SES to the top 10 percentile. For instance, a student at the bottom 10 percentile in the distribution of family SES in Germany has the value of –0.97, whereas a student at the top 10 percentile has the value of 1.50. The longer the bar, the larger the difference in family SES between the top and the bottom 10 percentiles. The length of the bar is relatively short in Japan and Finland, while it is relatively long in Germany and the United States. Korea is located between.

The slope of the bar indicates the extent to which family SES affects student's problem-solving skills: the steeper the slope, the stronger the effect of family SES. Although there is evidence of non-linear relationship between family SES and the

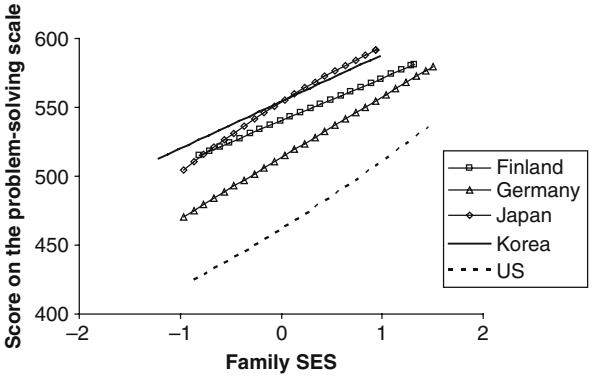

Fig. 2 Slopes of family SES by country

score in Japan and the United States,[1] the pattern does not differ substantially even if the linear relationship is assumed. Two groups of countries are distinguished. Finland and Korea show relatively less steep slopes of family SES, whereas Germany, Japan, and the United States show relatively steeper slopes. Again, it is interesting to see a significant difference in the degree of family SES effect between Japan and Korea.

Finally, the figure also clearly shows the higher levels of performance among Japanese and Korean students. Japanese and Korean students whose family SES level is the OECD average (i.e., the value 0) score about 550 points, while German and American students with the same level of family SES score 510 points and 460 points, respectively.

Within-School and Between-School Effects

The overall effect of family SES on students' problem-solving skills is a combination of within-school and between-school effects (Willms, 1986). A within-school effect is the average within-school relationship between individual students' achievement and their family SES net of any school membership effects, while a between-school effect indicates the extent to which the average achievement for the schools is associated with the socioeconomic level of the schools, which is the aggregate of family SES of individual students who attend the school (Bryk & Raudenbush, 1992). The decomposition is important because the two aspects of inequality have different policy implications (Willms, 2004). If the within-school effect of family SES is more apparent than the between-school effect, it indicates larger inequalities among students within schools and thus requires educational practices or programs that are particularly geared to improving educational performance of students from lower SES background within schools. If the between-school effect is stronger than the within-school effect, in contrast, it suggests significant differences in mean achievement between schools composed with students predominantly from higher SES families and from lower SES families. A primary source of the pattern may be school segregation along the line of student's socioeconomic background, which requires policy makers to reconsider the ways in which their educational systems sort students into different schools and how students' socioeconomic background influences this process (Willms, 2004).

To address the issue, I used two-level hierarchical linear modeling technique, which allows the decomposition of total variation in student performance into within-school and between-school variation as well as separates within-school and between-school effects within a country. Panel A in Table 2 presents the result of the null model that includes no independent variables at any levels. The null model provides basic information on the extent to which total variation is decomposed into

[1] The statistical tests showed that the squared term of "family SES" was statistically significant in Japan and the United States, while it was not significant for the other three countries. The sign of the squared term was negative in Japan, while it was positive in the United States.

Table 2 Results of two-level hierarchical linear model on problem-solving skills

	Korea	Japan	Finland	Germany	United States
Panel A					
Between-school variation	2,823.8	5,230.0	354.5	4,593.5	2,597.1
Within-school variation	4,609.0	5,843.0	6,628.7	3,953.6	6,790.5
% of between-school variation among total variation	38	47	5	54	28
Panel B (effects of family SES)					
Between-school effect	88.925	144.674	31.8	102.044	84.599
Within-school effect	9.12	6.604	30.705	15.437	31.972
Overall effect	34.091	46.522	30.859	44.187	46.288
Panel C (index of school segregation by SES)	0.31	0.29	0.14	0.33	0.27

within-school and between-school variation. Thirty-eight percent of total variation in student performance in Korea is between schools, while the corresponding percentage in Japan is 47%. Although the relative proportions of variation between schools in Korea and Japan are smaller than the proportion in Germany (54%), they are larger than the percentage in the United States (28%). Comparisons to Finland (5%) highlight considerable levels of school differences in mean achievement in Japan and Korea.

Panel B in Table 2 presents within-school and between-school effects of family SES, along with the overall effect seen in Fig. 2.[2] The between-school effect, which indicates the relationship between school's mean score and school's average SES (calculated from individual student's family SES attending the same school), is strongest in Japan. In other words, the difference in school's mean scores among schools with different socioeconomic levels is much substantial in Japan than in any other countries analyzed. Although it is weaker than in Germany, the between-school effect in Korea is also considerably strong, being similar to the effect in the United States and much stronger than the effect in Finland.

The large between-school effects in Japan and Korea are mirrored in the relatively small effect within schools. The pattern of the relatively larger between-school effect than within-school effect is commonly found in educational systems where students are segregated into different schools, along the line of family SES, because of residential segregation (Willms, 2004). The pattern is also found in highly differentiated school systems where students are sorted into different types of schools

[2] Specifically, the model includes the index of ESCS as a measure of family SES in student-level equation predicting individual students' score on the problem-solving scale. In school-level equation, the school's mean SES, which is the average family SES among students attending the same school, predicts school's mean achievement. The overall effect is the estimate from the OLS regression without taking into account the nested structure of data.

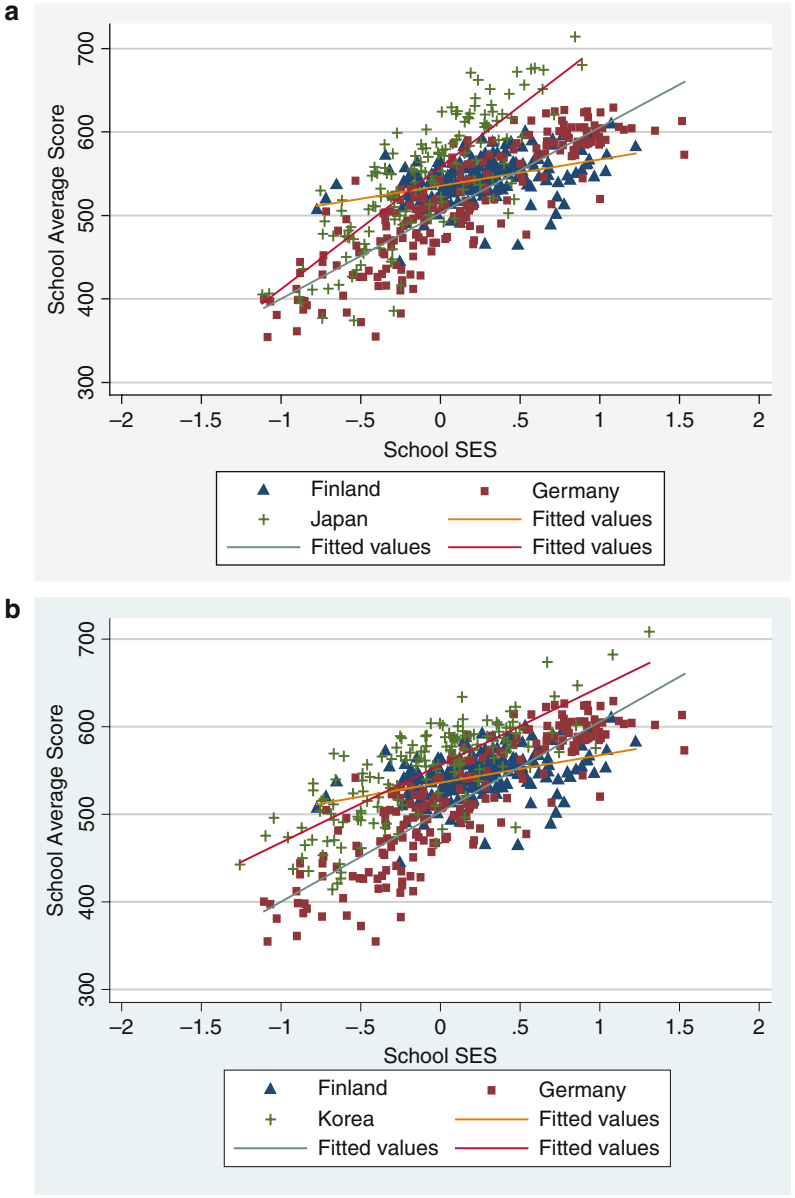

Fig. 3 **a**, **b** Relationship between School SES and school mean performance

that vary significantly in terms of their curriculum, prospect for post-secondary education, and educational credentials awarded. Studies of educational inequality in highly differentiated educational systems such as Germany and other continental European countries show that family SES affects the placement of students into a

particular type of schools even after controlling for ability (Buchmann & Park, 2005; Schnepf, 2002). In highly differentiated systems, students from high SES families are more likely to attend high-status schools and students from low SES families are more likely to attend low-status schools. Along with variation in curriculum and academic orientation, students' opportunities for learning diverge between high-status and low-status schools, resulting in substantial differences in mean achievement among schools varying in their average SES.

Panel C in Table 2 presents an index of the degree of between-school SES segregation.[3] Showing the proportion of variation in SES that is between schools, the index can take values from 0 to 1 (Willms, 2004). Larger values of the index indicate the higher degree of school segregation by SES. Germany (0.33) shows the greatest level of school SES segregation among the five countries, followed by Korea (0.31), Japan (0.29), and the United States (0.27). Finland (0.14) shows the smallest level of school SES segregation.

The relatively strong between-school effect in Japan is clearly shown in the scatter plot of school mean score against school mean SES. In Fig. 3a, the relationship between school mean score and school mean SES is depicted for Finland, Germany, and Japan and in Fig. 3b for Finland, Germany, and Korea. First of all, the weak relationship between school mean score and school mean SES in Finland is remarkable. Second, the relationship is steeper in Japan than in Germany, while the relationship in Korea is slightly less steep than in Germany. Finally, comparisons between Japan and Germany in Fig. 3a and the comparisons between Korea and Germany in Fig. 3b reveal that poor schools in Japan show relatively poorer performance compared to similarly poor schools in Korea. A large number of poor schools (especially those with average SES below the OECD mean 0) in Japan show similar levels of school performance compared to similarly poor schools in Germany, while most poor schools in Korea exceed similarly poor schools in Germany.

Academic vs. Vocational Schools

The considerably large difference in average performance among schools in Japan reflects the hierarchical structure of high schools where students are selected into schools supposedly according to their academic achievement. Compared to Germany where students are sorted into four different types of secondary schools at age 10, Japanese students have to decide whether to go to general (academic) high schools or vocational high schools after middle school graduation (after 9th grade). Although the major distinction in educational career is between general and vocational high schools (except for a very small number of technical colleges and high schools), general high schools themselves are clearly differentiated in ranking,

[3]The index is calculated as follows: the overall effect of family SES (OLS estimate) = η^2(Between-school effect) + (1–η^2)(within-school effect), where η^2 is the index of school segregation by SES (Willms, 2004: 13).

which is determined primarily by the extent to which schools succeed in placing their graduates into prestigious universities (Ono, 2001).

Although student's academic achievement is supposedly a major criterion for high school selection, various studies have shown how family background also affects high school decision among 9th graders. LeTendre (1996) shows how school teachers guide their students' decision on the type of high schools on the basis of not only students' academic performance but also their family background. Ono (2001) provides empirical evidence that the effects of family background on the ranking of high schools students attended persisted even after controlling for their GPA in 9th grade. These previous studies suggest that high schools in Japan are highly differentiated not only in the overall academic performance of their students but also in socioeconomic intake of their students.

Similar to Japanese high schools, Korean high schools are also differentiated into academic and vocational high schools. Upon graduation from middle school, students proceed to either academic high school or vocational high school, mostly depending on their grades and needs. Vocational high schools offer occupational training for students who enter job markets after graduation, whereas academic high schools are directed to prepare students for post-secondary education. Therefore, there are significant differences between the two types of schools in many aspects, including curriculum, academic pressure, and eventually access to opportunities for tertiary education. Vocational high schools are perceived as less prestigious than academic high schools. As of 2003, the proportion of students attending vocational high schools among total high school students was about 30%.

However, the Korean educational system is fundamentally different from the Japanese system in the extent to which academic high schools themselves are stratified. Compared to highly stratified academic schools in Japan, differentiation among academic high schools in Korea is much less apparent. This is because of the "Equalization Policy" (*P'yongjunhwa Chngch'aek*), which is probably the most significant and thus the most controversial policy in Korean education (Kim, 2003; Lee, 2004). Since implemented in Seoul (the capital of Korea) and major Metropolitan areas in 1974, the equalization policy has abolished school-specific entrance examinations, which determined students' admission to high school. The policy was originally intended to reduce differences among high schools and relieve intense competitions for top high schools. Under the equalization policy, students have been randomly assigned to academic high schools within their school district by a lottery. Before 1998, students who attained at least the minimum score on the national entrance exam were eligible for the random assignment. After even abolishing entirely the national entrance examination for high school in 1998 in four big cities including Seoul, the equalization policy in major areas has relied on middle school activities records for high school admission. Importantly, this equalization policy is applied to both public and private schools. In other words, in Korea, private schools as well as public schools do not select students on the basis of their own criteria but have to be subjected to the random assignment.

Despite the Equalization Policy, however, differentiation among high schools can be still substantial. Note that the equalization policy has been applied to academic

high schools only. Applicants for vocational schools still choose their schools. Given that 70% of middle school graduates go to academic high schools and college degrees significantly affect individuals' life chance, many of vocational high school students, who are more likely to come from poorer families on average than their counterparts in academic high schools, have poor academic performance. Therefore, a significant difference in the students' overall performance and also in socioeconomic intake of students is expected between academic and vocational high schools.

However, the considerably steep slope of school mean SES in Fig. 3b is rather unexpected given that according to the Equalization Policy, students have been randomly assigned into an academic high school within residential school district. In order to better assess sources of the substantial between-school effect in Korea, I present another scatter plot showing the relationship between school mean score and school mean SES with academic and vocational high schools separated (Fig. 4). For comparison, I present the same scatter plot for Japan as well (Fig. 5).

Comparing the scatter plots for Japan and Korea reveals some interesting differences between the two countries. First, as already seen in Fig. 3a, b, the slope of school mean SES is much steeper in Japan than in Korea. Second, differentiation between academic and vocational high schools in both school mean performance and school mean SES is more dramatic in Korea than in Japan. In Korea, vocational high schools are low-performing and poor schools, occupying the leftist bottom tail of the scatter plot. Although vocational high schools in Japan are also in general low-performing and poor schools, the degree of differentiation between academic and

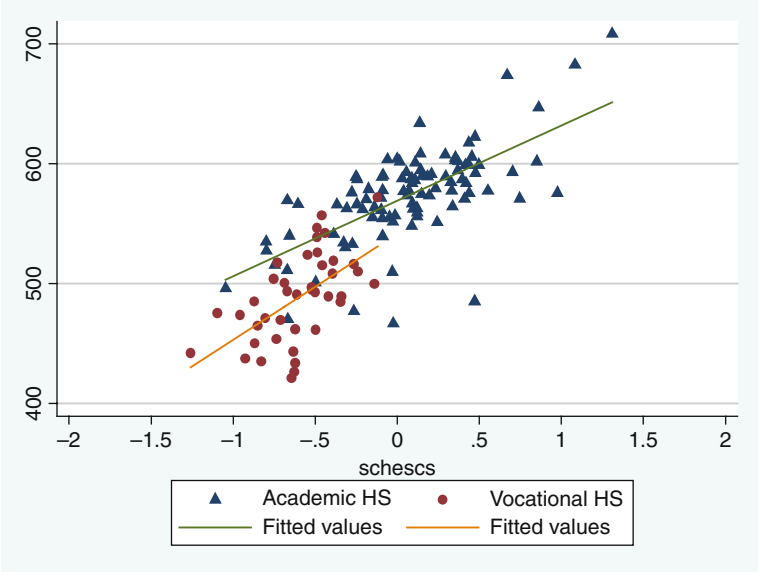

Fig. 4 Academic vs. vocational high schools in Korea

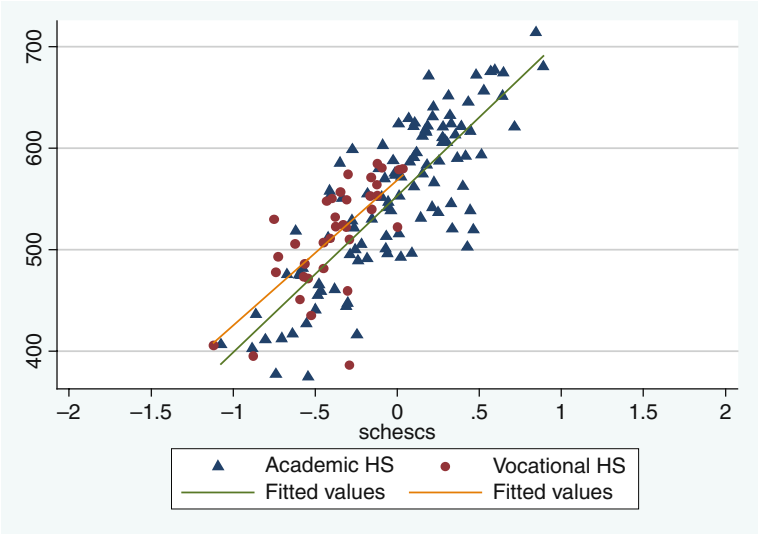

Fig. 5 Academic vs. vocational high schools in Japan

vocational schools in Japan is not as significant as in Korea. In Japan, at the lower level of school mean SES, many vocational schools have higher levels of mean performance than do academic schools. In short, vocational high schools in Korea are distinctively disadvantaged in mean performance and socioeconomic intake of students compared to academic high schools. In Japan, vocational high schools are not necessarily the lowest-performing schools. In fact, by looking at the effect of GPA in 9th grade on the ranking of high school attended, Ono (2001) already showed that the effect of GPA was stronger for attending vocational high schools than for attending the lowest-ranking schools. In other words, in Japan vocational high schools are "more attractive than the lowest-ranking high school(s)."

Finally, examining the relationship between school mean performance and school mean SES separately between academic and vocational high schools in Korea shows that the slope is somewhat steeper among vocational high schools than among academic high schools. But more importantly, the slope is still considerably steep among academic high schools. In other words, despite the implementation of Equalization Policy, school differentiation among academic high schools is substantial in Korea. One reason of the substantial level of school differentiation may be related to residential segregation. The random assignment of students into an academic high school occurs within school districts on the basis of residence. Therefore, depending on the degree of residential segregation along the line of family SES, students can attend high schools that significantly vary in school mean performance and socioeconomic intake of students. In fact, Korean public debates and news media have long focused on school differences between school districts, especially between school district no. 8, which consists of students, whose parents are highly educated and have high-ranking job, and others.

Public vs. Private Schools

Another major aspect of school differentiation is distinction between private and public schools. Although private (especially Catholic) schools in the United States generally show higher mean performance compared to their public counterparts (Bryk, Lee, & Holland, 1993), the relative advantage of private schools over public schools may not be generalized into other societies. In Japan, public schools have long been better than private schools (Kariya & Rosenbaum, 1999). However, Kariya and Rosenbaum (1999) also show recent changes in educational environments of private schools. The unintended consequences of policies for reducing stratification of public schools are improvement of achievement outcomes and popularity among private schools. Kariya and Rosenbaum (1999: 213) argue that "today it is easily observed that the old tradition of inferior private high schools is no longer true. Many private high schools are quite good." However, their analysis was conducted at the level of prefecture but not at the school level. Specifically, they looked at the number of students admitted to elite universities from private high schools in specific prefectures. What they found was that prefectures that had implemented policies for reducing stratification among public high schools had larger numbers of students from private schools who entered elite universities than prefectures that had not implemented such policies. From this analysis, it is difficult to draw a conclusion on how private schools fare to public schools in terms of their overall performance. As the authors themselves recognized, moreover, data on school achievement outcomes are rare in Japan, which forced the author to use the number of students admitted to elite universities, instead.

With PISA data, it is now possible to compare the average levels of performance between public and private schools across nation. Table 3 presents the percentages and number of public and private high schools in Japan and Korea separately for academic and vocational high schools.[4] Among 143 Japanese schools that participated in PISA, 106 schools (74%) are public schools, while 37 were private schools. In other words, the majority of Japanese high schools are public schools. Figure 6 shows the relationship between school mean performance and school mean SES separately for public and private schools. Evident from the figures is that at the same level of school mean SES, public schools tend to be better than private schools.

Moving to Panel B in Table 3, overall there are more private high schools than public high schools in Korea. However, the pattern is different between academic and vocational high schools. Private schools account for 62% of academic high schools, while they account for 42% of vocational high schools. The comparison to Japan highlights the substantial proportion of private schools in Korean education.

The Equalization Policy is applied to both public and private schools in Korea. In other words, private schools in Korea have no choice of students. Because

[4] In the Japanese PISA data set, there is one technical college, while in the Korean data set there are 11 middle schools. Those schools were excluded.

Table 3 Percentage and number of public and private high schools

		Public	Private	Total
Panel A. Japan				
Academic high school	%	70.1	29.9	100
	N	75	32	107
Vocational high school	%	86.1	13.9	100
	N	31	5	36
Total	%	*74.1*	*25.9*	*100*
	N	*106*	*37*	*143*
Panel B. Korea				
Academic high school	%	38.1	61.9	100
	N	37	60	97
Vocational high school	%	58.5	41.5	100
	N	24	17	41
Total	%	*44.2*	*55.8*	*100*
	N	*61*	*77*	*138*

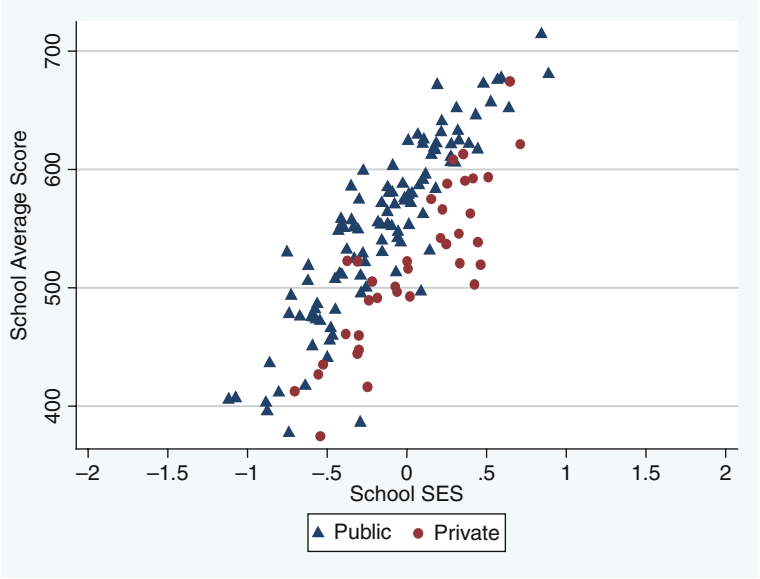

Fig. 6 Public vs. private high schools in Japan

government provides financial support to private schools to make tuition similar between public and private schools, parents of students who are assigned to private schools do not differ in educational costs from parents of students who are assigned to public schools. In fact, the distinction between public and private schools in Korea has a different meaning as the distinction in other countries because of the Equalization Policy that does not allow private schools to choose students at their will. In the standardized Korean education context, the distinction between public

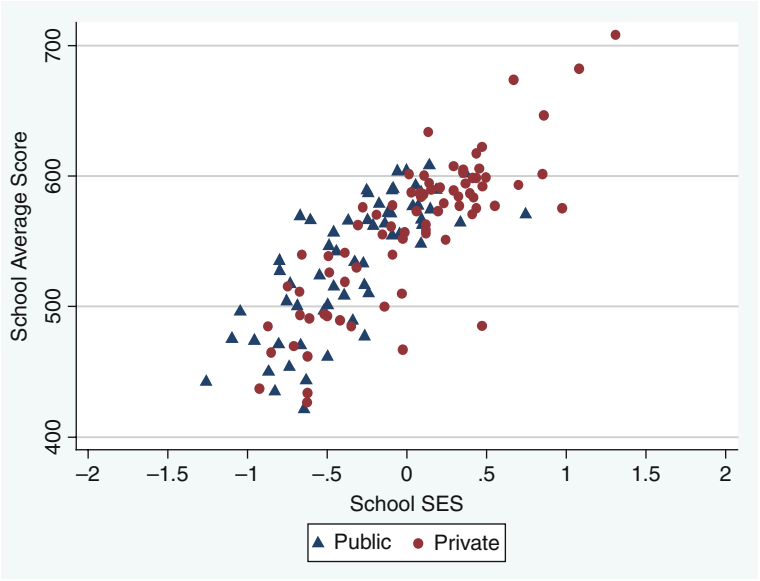

Fig. 7 Public vs. private high schools in Korea

and private schools is not substantial.[5] This context leads to an expectation that differences in both school mean performance and school mean SES between public and private schools should be negligible.

Figure 7 is in general consistent with the expectation. Overall, the differences between public and private schools are not apparent. However, there are a couple of private schools outstanding in their higher mean SES and higher mean performance. In fact, there is no public school whose mean SES is greater than 1, while there are a few of such private schools. It is difficult to identify what those private schools with mean SES greater than 1 are given that school identifiers are not available in PISA. In 2002, Korean government allowed six private schools to be entirely "independent" in selecting their students and determining tuitions. In reaction to growing demand for diverse secondary education, Korean government decided to have these experimental cases of so-called Independent Private Schools to assess the possibility of expanding this kind of schools in near future (2005). Studies show the overall higher levels of family SES among students attending those private schools than students attending public schools (2005). Again, because PISA did not collect information on "Independent Private Schools," it is impossible to determine whether those private schools that show considerably high levels of mean performance and mean SES are "Independent Private Schools."

[5] The fundamental distinction between public and private schools is who the owner of school is. Private schools are owned by individuals and they do have rights to select teachers, although not students. Teachers in public schools should move to a different school in every 5 years within providence, while teachers in private schools usually stay in the same school for a long time period.

Conclusion

A closer look at Japanese and Korean high schools and their students reveals that the stereotyped criticism on Japanese and Korean education does not stand against empirical evidence. I do not argue that rote learning, memorization, and standardized testing are not major aspects of Japanese and Korean education. They are certainly found in Japanese and Korean education. But what the closer look shows is that the extraordinary performance of Japanese and Korean students is not simply the result of such stereotyped educational practices. It is not desirable for American education simply to try to implement some features of East Asian education. But it is also not desirable for American education to ignore the high performance of East Asian education with stereotyped misconception. More systematic research is needed to assess strength and weakness of high school education in Japan and Korea in comparative perspective.

Another important finding of this study is the significant level of school differentiation in mean performance among Japanese and Korean high schools. This is in sharp contrast to the considerably small between-school (between-classroom) variation found in TIMSS among 13-year-olds (Koretz, McCaffrey, & Sullivan, 2001). The difference reflects the significant change in structural features of high school and middle school education in Japan and Korea. It is important to recognize that most previous literature on educational achievement in Japan and Korea was on the basis of elementary or middle schools and their students. Along with the availability of PISA data that surveyed high school students, it is now feasible to examine Japanese and Korean high school students' educational performance in more detail.

Interestingly, the result of this study highlights some important differences between Japan and Korea. Japan shows much larger variation in student's problem-solving skills than Korea, which is primarily driven by greater variation between schools in Japan than in Korea. Reflecting the selection process, Japanese high schools are more stratified than Korean high schools. The two educational systems differ not only in the overall degree of differentiation but also in the ways in which academic vs. vocational high schools and public vs. private schools affect student's performance. Previous literature has not paid serious attention to differences between Japanese and Korean education, along with its exclusive focus on elementary and middle school education. More balanced research will extend our understanding of differences between Japanese and Korean education as well as similarities between the two.

References

Baker, D. P., & LeTendre, G. K. (2005). *National differences, global similarities: World culture and the future of schooling*. Stanford, CA: Stanford University Press

Bryk, A. S., Lee, V., & Holland, P. (1993). *Catholic schools and the common good*. Cambridge, MA: Harvard University Press

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury, CA: Sage Publications

Buchmann, C., & Park, H. (2005). *The institutional embeddedness of educational and occupational expectations: A comparative study of 12 countries*. Paper presented at the Annual Meeting of Research Committee 28, International Sociological Association, Los Angeles, August 18–21.

Ganzeboom, H. B. G., De Graaf, P. M., & Treiman., D. J. (1992). A standard international socio-economic index of occupational status. *Social Science Research*, *21*, 1–56.

Hanushek, E. A. (2002, Fall). The seeds of growth. *Education Next*, *2*(3), 10–17.

Kariya, T., & Rosenbaum, J. E. (1999). Bright flight: Unintended consequences of detracking policy in Japan. *American Journal of Education*, *107*, 210–230.

Kim, K. (2003). Modifications of the equalization policy and suggested policy measures. *Korea Journal*, *43*, 200–214.

Kim, K., & Phang, H. (2005). Social class and gender differentials in Korean and Japanese higher education. *Korean Journal of Sociology*, *39*, 119–151 in Korean.

Kim, K. H. (2005). Learning from each other: Creativity in East Asian and American education. *Creativity Research Journal*, *17*, 337–347.

Koretz, D., McCaffrey, D., & Sullivan, T. (2001). Predicting variations in mathematics performance in four countries using TIMSS. *Educational Policy Analysis Archives, 9*(34). Retrieved from http://epaa.asu.edu/epaa/v9n34/ .

LeTendre, G. (1996). Constructed aspirations: Decision-making processes in Japanese educational selection. *Sociology of Education*, *69*, 193–216.

Lee, J.-H. (2004). The school equalization policy of Korea: Past failures and proposed measure for reform. *Korea Journal*, *44*, 221–234.

Ministry of Education and Human Resources Development. (2004). *Quality education for all young people: Challenges, tends, and priorities*. Seoul: International Bureau of Education.

Ono, H. (2001). Who goes to college? Features of institutional tracking in Japanese higher education. *American Journal of Education*, *109*, 161–195.

Organization for Economic Cooperation and Development. (2004). *Problem solving for tomorrow's world: First measures of cross-curricular competencies from PISA 2003*. Paris: OECD.

Raudenbush, S. W., & Kim, J. (2002) Statistical issues in analysis of international comparisons. In A. C. Porter & A. Gamoran (Eds.), *Methodological advances in cross-national surveys of educational achievement* (pp. 267–294). Washington, DC: National Academy Press.

Schnepf, S. V. (2002). *A sorting hat that fails? The transition from primary to secondary school in Germany* (Innocenti Working Papers No. 92). UNICEF.

Stevenson, D. L., & Baker., D. P. (1992). Shadow education and allocation in formal schooling: Transition to university in Japan. *American Journal of Sociology*, *97*, 1639–1657.

Stevenson, H. W. (1991). Japanese elementary school education. *The Elementary School Journal*, *92*, 109–120.

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

Sung, K. (2005). A critical review on the results of the self-funded private school. *Korea Journal of Sociology of Education*, *15*, 179–204.

US Department of Education. (1987). *Japanese education today*. Washington, DC: Government Printing Office.

Willms, J. D. (1986). Social class segregation and its relationship to pupil's examination results in Scotland. *American Sociological Review*, *51*, 224–241.

Willms, J. D. (2004). Reading achievement in Canada and the United States: Findings from the OECD Program for International Student Assessment. Final Report. Human Resources and Skills Development Canada.