Intergenerational Educational Attainment in the Process of Educational Expansion in Japan

May 25, 2007

International Sociological Association RC 28 Spring Meeting in Brno, Czech.

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Abstract

Many researchers have investigated the effects on educational attainment from the perspectives of the sociology of education and social stratification research. This topic was a question in controversy because it was difficult to interpret the causes of changes in educational attainment: Did educational opportunities actually become equal, or did they remain unequal despite educational expansion? In this paper, using the Japanese data from the Social Stratification and Social Mobility Survey (SSM2005), a latent class model was estimated in order to determine the qualitative pattern of intergenerational educational attainment. Although there were a few differences between male and female samples, a strong relationship between parents' and children's education was observed in every generation. Indeed, people who progress to universities have increased; however, the situation wherein children whose parents have received higher education have an advantage when enrolling in universities has not changed after the Second World War. We could observe signs that parents' receipt of university education determines their children's future educational choices. However, since the choices regarding advancement to universities or other tertiary educational institutions are affected by the high school course that one has attended, we need to focus on the relationship between high school tracking and parents' educational attainments.

Introduction

People have held the belief that education will dismantle the social stratification system and make their society more equal. After the Second World War, the Japanese educational system was reformed into a unidimensional one. Since then, the Japanese educational system has expanded rapidly because many parents place considerable value on their children's education. Therefore, posterity tends to receive a higher level of education than did the former generation, and there has been a relative decrease in the value placed on completing one's university education. For example, due to the fact that formerly, there were fewer people who completed university education, the value of university education was higher than it is at present.

Although sociologists have continued to point out that a child whose parents have completed a higher level of education is more likely to be highly educated, the relationship between the educational attainments of parents and those of children differs among generations. For the sake of convenience, we often consider the people's education in terms of the number of years for which they attended school. However, originally, educational attainment is a categorical variable. Moreover, the number of high school and university dropouts is not so large, and the distribution of the years for which they attended school is seriously biased. Before we numerically estimate the effects on educational attainment on the basis of parents' education, it is necessary to reexamine the pattern of the relationship between parents' education and that of their sons/daughters.

In this paper, I will briefly review the Japanese educational system and its history, and consider the importance of investigating the intergenerational educational relationship. Next, I will explain

the data, method, and variables used in this paper. After providing my interpretation, I will conclude

the analysis with a sequential assignment for the future.

Outline of the Japanese Educational System

Although the Japanese modern educational system was established in 1872, students who

could progress to post-compulsory education were fairly restricted under this old system. After

compulsory education, the secondary schools had several types of courses, and the system was

slightly complicated, like the system of education in European countries. By the year 1900, over

ninety percent of children attended elementary school. However, secondary and tertiary education

did not spread to the general public[1]. Since the education had transferred the complex system into a

simple one after the Second World War, it became easier for many students to attend

post-compulsory educational schools. The democratic ideology and unprecedented economic growth

aroused people's enthusiasm about education. Although it was not compulsory to attend high school,

the applicants for high schools continued to increase. As industrialization changed the structure of

Japanese society, many farmers' children had to look for other jobs, and they too consider education

as an opportunity for a better, more stable, and profitable business. Many people believed that

anyone could get a good job following the completion of higher education. At the outset, the

advancement rate to new high schools was below fifty percent; however, in 1974, it exceeded ninety

percent. This shows that the expansion of the Japanese educational system had an explosive aspect

(Treiman and Yamaguchi 1993).

Figure 1 shows the rate of people who completed their education since the year 1950. From the 1970s, the number of people who completed only junior high school rapidly decreased and stopped at ten percent. This implies that from the 1970s, most Japanese people completed high schools. On the other hand, compared with the advancement rate to high school, tertiary education had not increased. During the 1970s and 1980s, with some exceptions, the Ministry of Education did not permit the establishment of new universities and department. Therefore, the rate of advancement to university was stabilized at below thirty percent. Although, in those days, women's advancement rate to tertiary education exceeded that of men, it is necessary to pay attention to the function of junior colleges, which had faculties of only the humanity, home economics, and dietetics because women accounted for the majority of the junior college students (Ishida 1998). In other words, even if the women's advancement rate to tertiary education exceeded that of men, men rarely attended junior colleges and women's advancement rate to four-year universities is still lower than that of men (Brinton and Lee 2001)[2].

The advancement rate to four-year universities has risen once again since the 1990s because the population aged eighteen began to decrease rapidly owing to the low fertility rate. Universities cannot reduce the quota of students, because they depend on the tuition fees paid by the students and their parents. Relatively fixed quota and the decreasing number of students make admission to universities easier than it was before, and it has become more difficult for junior colleges to attract students. As women's advancement to the labor market has been promoted, employers who expect women to occupy significant positions rather than merely work as complementary workers has been

increasing. Therefore, many junior colleges became unpopular among students and were reestablished as four-year universities. In Figure 1, since specialized training college students are regarded as students who completed high school, until the specialized training colleges were established, the number of high school graduates is overestimated. Only less than thirty percent of high school graduates begin working and others progress to tertiary educational institutions. The systematic system from high school to work, which Rosenbaum and Kariya (1989) indicated, has changed since the number of high school graduates who begin working immediately has decreased.

Although it is controversial to determine the turning point of educational expansion in Japan, we can sum up the phenomenon as follows. First, in general, post-compulsory education expanded until the mid-1960s. Second, an explosive expansion occurred in high school education and the advancement rate to high schools rose to over ninety percent. Although high school education became saturated, higher education did not spread to more than thirty percent of the population. The advancement rate to universities stagnated at below thirty percent. Third, from the 1990s, the advancement rate to universities rose once again. I will consider this term division when I analyze my data.

The Relationship between Parents' Education and Children's Education

There exists abundant research focusing on the relationship between parents' and children's education. However, most research has investigated the effects on children's educational attainment as a dependent variable, and estimated the determinants of the effects, such as gender, parents'

occupation, parents' education, etc., as independent variables. Generally, if we consider the

educational attainment to be the number of years spent in education and estimate the linear

regression model, the slope coefficients of social origin become smaller. However, we cannot

distinguish this result as a cause of educational expansion or as the actual equalization of educational

opportunity. Since Mare (1980, 1981) suggested that transition from one stage of education to the

next can be estimated better by the logit model, the "transition model," whose dependent variable

implies binary choice regardless of whether or not one progresses to the next stage becomes popular

among sociologists. Mare's model implies that the change in educational inequalities was caused not

by endogenous variables like educational expansion but by exogenous variables. Because of the

educational expansion, in the following generation, there was the crucial decision to proceed to the

higher level of education, and the coefficient of the higher transitional point become larger than that

of the former generation (Blossfeld and Shavit 1993). In other words, the transition model is

convenient for grasping the educational inequalities under the educational expansion.

On the other hand, there are some criticisms regarding the transition model. For example,

Breen and Jonsson (2000) argued that the binary transition logit model presumed a unilinear

sequential mode and that it might overlook the qualitative differences in parallel branches of schools.

For example, if we consider the Japanese educational system, we can find that there are several

pathways after high school education: The major pathways are attending specialized training college,

junior college, and university, and these pathways exist in a parallel fashion[3]. In other words, high

school graduates have to select one pathway from among all of them. Since the binary logit model

estimates only whether or not one has progressed to the next stage, it may ignore the qualitative differences within the same educational stage. Furthermore, although these regression models can estimate the degree of effect in terms of numerical value, it is difficult to understand the various qualitative patterns of the relationship between parents' and children's education. In addition, it is possible that there is no example that investigates the qualitative pattern of the intergenerational educational relationship. It is worth examining the relationship in this manner because it enables us to clearly observe how educational expansion occurred in the later generation.

Data, Method, and Variables

SSM2005 Data

This paper employs the Social Stratification and Social Mobility (SSM) Survey conducted in 2005 in Japan. The SSM project began in 1955, and data concerning people's career mobility and educational history has been collected every ten years. The SSM2005 project aims to compare the data of Japan with those of South Korea and Taiwan; the surveys for all three countries were conducted simultaneously. However, in this paper, I only use the Japanese data. The SSM questionnaires are slightly complex because they contain questions about people's career history after their graduation from school, and data cleaning works have not yet been completed. I use the first temporary version that was delivered to all project members in November 2006. Although the data may be renewed in the near future, the influence of the renewal will be negligible.

Latent Class Analysis of Educational Attainment

As I mentioned above, it is important to keep the categorical aspects of information regarding

people's educational attainments. A regression model may conceal this qualitative information. In

order to clarify the pattern of educational attainment between the parents and their children, I will try

to find the latent class underlying the educational attainment of the fathers, mothers, and their

children.

The idea of latent class analysis is derived from Lazarsfeld's latent structure model, which

includes factor analysis characterizing continuous latent structure, based on continuous observable

variables (McCutcheon 1987). Latent class analysis is a method of analyzing relationships in

categorical data; it includes either the nominal or ordinal level of measurement. From the many

observable patterns of categorical variables, we can compile a certain small number of latent

typologies of intergenerational educational attainment.

Suppose that the probability of being in a given cell of a cross-tabulation of three educational

attainment variables, C (=children's education), F (=fathers' education), and M (=mothers'

education), with i, j, k levels, and one latent variable X, with t latent class, is represented as follows:

$$\pi_{ijkt}^{CFMX} = \pi_t^X \pi_{it}^{\overline{C}X} \pi_{jt}^{\overline{F}X} \pi_{kt}^{\overline{M}X}$$

This implies that being in cell *ijkt* is the product of the probability of being at level t of X and the

three conditional probabilities of being at levels *i, j,* and *k*. In addition to this, we can assume that the

existence of the parsimonious models, based on the log-linear modeling (Hagenaars 1993, Evans &

Mills 1998). If we examine the intergenerational educational attainment, we cannot ignore the

existence of strong educational homogamy, regardless of the generation (Shida, Seiyama, and

Watanabe 2000). Therefore, the conditional independence model {XC, XF, XM, FM} is formulated

as follows:

$$\log m_{tijk} = u + u_t^X + u_i^C + u_j^F + u_k^M + u_{ti}^{XC} + u_{tj}^{XF} + u_{tk}^{XM} + u_{jk}^{FM}$$

When the FM restriction was deleted, the fits of the models worsened considerably and were

statistically rejected. Therefore, it is reasonable to include the FM restriction in the models.

Variables

Figure 2 shows the distribution of completed education in the SSM2005 data set. Although the

lines of distribution in Figure 2 trace the line of Figure 1, the fluctuation of lines is more intense

because of the existence of measurement error. However, the value of "weight" has not yet been

ascertained, and we may be able to ignore the measurement error of every year if we combine the

several sequential years into one period. Then, I divide the generations of the sample into the

following three categories: the respondents born between 1935 and 1950, those born between 1951

and 1969, and those born between 1970 and 1985. The first generation received their education

under the rapid expansion of high school. For the second generation, high school education was

saturated and university education halted the expansion of education. From the third generation,

university education began to spread once again.

One of the difficulties involved in the Japanese educational system is the question of how to treat

the difference between the old and new systems. As I mentioned in the outline, the Japanese

educational system changed from a complex, European type of educational system into a simple

American type of system. The duration of compulsory education itself increased from six to nine

years. It is controversial that certain middle schools in the old system should be regarded as the

present "high school" or "college." In addition, there is an important problem pertaining to whether

or not specialized training colleges should be included in higher education. Although the number of

students studying in specialized training colleges has increased since they were established in 1976,

there exist no graduates from these schools before 1976. Besides, in the questions pertaining to

mothers' or fathers' education, the SSM survey did not provide the specialized training college

category. Therefore, in order to maintain consistency between the children's and parents' educational

history, this paper regards a student who has completed specialized training college as one who has

completed high school education.

In sum, I recode the respondents' education into the four categories of compulsory education;

secondary (high school) education, which includes the completion of specialized training college;

junior college and college of technology (*kôsen*) education[4]; and four-year university and graduate

school education. Parents' education is also recoded into the same categories in addition to another

category, namely, "don't know" (DK) because there were quite a few respondents who did not know

their parents' educational qualification. If parents received education under the old system,

elementary school and upper elementary school (*kôtô-shôgakkô*) are regarded as compulsory

education; middle school (*chûgakkô*), upper girls' school (*kôtô-jogakkô*), vocational school

(jitsugy*ô- gakkô*), and teacher's college, (*shihan-gakkô*) as secondary education; and old high school

(*kôtô-gakkô*), old specialized training college (*semmon- gakkô*), and upper teacher's college (*kôtô-shihan-gakkô*), as junior college and college of technology education.

Results

Fit Statistics of the Loglinear Models with Latent Class

Table 2 shows the model fit statistics of the conditional independence model with latent class. With the exception of males born between 1935 and 1950 and those born between 1970 and 1985, the hypotheses of the models with two latent classes were rejected because the L^2s were statistically significant. In the former two groups, the models with two latent classes were accepted and the models with three latent classes were completely accepted. Therefore, we will primarily consider the conditional probability of the models with three latent classes, and the two latent class models will also be considered in the models of males born between 1935 and 1950 and those born between 1970 and 1985.

Latent Class Types

Table 3 is the latent contingency table of educational attainment. First, we examine the two class models of males, i.e., those born between 1935 and 1950 and those born between 1970 and 1985. The former group can be divided into two distinct classes: The first class accounted for over 80% of the males and the most of them had completed compulsory or secondary school. Within the first class of males, most parents had only completed compulsory education, and a fairly large

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number of respondents did not know their parents' educational qualifications. On the other hand, the second class of males did not exceed 20% of the males, and most of them had proceeded to pursue higher education. Their parents' educational level was also relatively high. Within the second class, the parents who had only completed compulsory education accounted for about 20% of the parents. Although it was stated that the opportunity for post-compulsory education had expanded in this cohort, the result shows that there was a strong barrier with regard to the opportunity for post-compulsory education, and whether the males could advance to a higher educational level depended on their parents' educational level. This simple latent class reappeared in the case of the males born between 1970 and 1985. Although the probability of completing only compulsory education diminished and parents' educational level rose to that of secondary education, the latent class structure is similar to that of the males born between 1935 and 1950. The second class, whose educational level was relatively high, accounted for 30% of the males, which is about twice the number of second class of males—born between 1935and 1950— whose educational level was relatively high. This implies that the number of males who completed university increased approximately twofold[5]. However, over half of the fathers in the second class had completed university education compared with the first class, wherein only six percent of the fathers had completed university education. Thus, we can infer that the issue of unequal educational opportunities for higher education has not yet been resolved.

In turn, let us pay attention to the three class models. The third class of males born between 1935 and 1950 and those born between 1970 and 1985 may correspond to the second classes of the

two-class models. The respondents who belonged to the third class had a higher level of education and their parents also had relatively higher educational attainments. The first and second classes of males born between 1935 and 1950 can be distinguished only by the conditional probability of the respondents' educational attainments. Although both classes of parents received only compulsory education, the first class received a relatively higher level of education. It is impossible to discern the differences between both classes by looking at the parents' education. In the next generation, as the advancement rate to university rose, the class wherein the probability of persons who completed university accounted for the majority became the second largest. The first and the third classes can be distinguished by the parents' education. Although the parents of the respondents of the third class had a higher level of education than those of the respondents of the first class, the respondents' educational attainments were more varied among the respondents of the first class than they were among the respondents of the third class. On one hand, people whose parents had only received compulsory education had diversity with regard to their own educational attainments; on the other hand, there were signs of educational reproduction, which meant that people may have had the tendency to attain the same level of education as their parents. The important point that could distinguish the first and second classes of males born between 1970 and 1985 is the conditional probability of the "DK" response to their parents' education and the distribution of their parents' educational attainments. The parents of the respondents of the first class had completed high school, and their children's educational attainments were relatively diverse, which may suggest that the educational level of the parents of the males of the second class who were born between 1951 and

1969, increased as a result of educational expansion. Although the number of respondents who only completed compulsory education decreased compared with the former generation, people whose parents had a low level of education were more likely to remain at the level below secondary education, and those who did not know their parents' educational attainments might have been more likely to remain below the secondary education level, or those whose parents' educational attainments were unknown seemed to receive a lower level of education.

Finally, we examine the sample of females. Females born between 1935 and 1950 can be divided into three distinct classes. With the exception of the fact that a larger proportion of females completed junior college and a smaller number completed university, the structure of the latent class was similar to that of the males belonging to the same generation. In the next cohort, the first and second classes can be distinguished by the different distributions of the parents' educational attainments. Although the majority of females had completed at least secondary education, there might be a strong difference between the two classes. It is not possible to determine whether the parents' educational level affected the qualitative difference in their children's secondary education. The number of respondents who could advance to the university was still lower than the number of males (in the same cohort) who could advance to university. In the youngest cohort, the differences among the three classes were once again clear, and the respondents who completed junior college and university can be distinguished into different classes. On one hand, parents who completed high school education tended to have their daughters attend junior colleges; on the other hand, parents whose daughters completed university education had a slightly higher education. In other words,

mothers' completion of higher education had a strong association with their daughters' education.

This situation can also be observed in the sample of males in the same cohort. Due to the expansion

of higher education, in the sample of females in the same cohort, there may be a barrier with regard

to the completion of junior college and the completion of university.

Discussion

Throughout this paper, by employing the SSM2005 survey data, I tried to find a pattern of

intergenerational educational attainment. According to the latent class analysis based on the loglinear

models, we were able to find a clear relationship pattern between parents' and children's education

on the basis of educational expansion. Although the structure of intergenerational educational

attainments was slightly complex in the sample of the middle cohort, an association that determined

whether the respondents could progress to the upper stage of education has been maintained. Due to

the expansion of education, the significant barrier seems to move to the upper level of education.

Although this finding may be supported by Mare's transition model, from the latent class analysis,

we can observe the qualitative differences among different gender and cohort groups.

In this paper, I employed a simple loglinear model with latent class variables. However, we

should examine the more adaptive, complex models because these methodologies have been

developed considerably. Furthermore, we need to reexamine the effect of the characteristics of the

Japanese educational system—high school tracking and specialized training college—which played

a key role in educational expansion. Although most people attend high school and there is legally

only one simple track in high school[6], all Japanese know that there are actually several vocational courses and school rankings in the high school system. It is well known that the school tracking and rankings have independent effects on the decision regarding whether or not students advance to higher education (Ono 2001), and the high school in which students enroll is an extremely important factor for junior college students (Kariya and Rosenbaum 1987). From our analysis, in the younger cohort, there was a significant decision to proceed to the upper stage of education; however, parents' educational attainments may still, in fact, affect the selection of a high school because the high school one attends determines the advancement to higher education. Although the SSM2005 did not ask the parents which high school course they attended, it asked about the high school course of respondents and the approximate ranking of the school. In addition, the function of specialized training colleges in the Japanese higher educational system has not yet been explained from the sociological viewpoint. Since the Japanese higher educational system historically bears a load of the private sector, parents have to pay expensive tuition. What is the difference between those who completed junior colleges and those who completed specialized training colleges? Is the division clearer between those who could progress to tertiary education and those who could not, or between those who attended junior college or specialized training college and those who went to university? Further, are there qualitative educational differences among the parents of those who graduated from these higher educational institutions? In the future, we will focus on the analysis of the effects of parents' education on high school tracking and the advancement to different higher educational institutions.

Notes

1)   Under the old Japanese educational system, compulsory education involved only six years of elementary school. However, the Occupation government introduced the new school system, which was modeled on the American system, and compulsory education came to include six years of elementary school and three years of junior high school. This new system has continued until now.

2)   Specialized training college was established in 1976; it consists of specialized courses, general courses, and upper secondary courses. Although the School Education Act does not include specialized training colleges in the formal school category, the permission of the Ministry of Education is required to establish a specialized training college. Due to the fact that when we refer to the specialized training colleges, we mean upper secondary courses, statistically, specialized training college students are sometimes included in the higher education category (for example, http://www.mext.go.jp/english/org/f_formal_22.htm). However, there is no established theory on whether or not specialized training colleges should be included in higher education. Figure 1 considers those who completed specialized training college as high school graduates. Today, since over twenty percent of high school graduates progress to specialized training colleges, we cannot ignore the specialized training college graduates.

3)   After completing specialized training college or junior college, there are unusual pathways to enroll in four-year universities. However, transferring to university after graduating from specialized training college or junior college is severely restricted.

4)   Colleges of technology (generally, this school is called *kôsen* in Japanese) were established in

1961. Students who completed junior high schools enroll in this school and study engineering for five years. If one graduated from this school, one can matriculate as a junior at university. Although the proportion of colleges of technology is not large, the Ministry of Education regards graduating from this school as higher education.

5) We can calculate the approximation of the cell of contingency table from Table 3. In the sample of males born between 1935 and 1950, the first class accounted for 83.7% of the respondents and the second class accounted for 16.3%. Within the first and second classes, the respondents who completed university education accounted for 8.9% and 83.9%, respectively, of the respondents. Therefore, the approximate probability of persons who completed university education is $0.837 \times 0.089 + 0.163 \times 0.839 = 0.211$. The real probability of the sample is 218/1083=0.201.

6) Even if students complete high school vocational courses, they can receive the same matriculation that can be obtained in academic courses. However, generally, the vocational courses are less prestigious and are ranked as lower because people believe that vocational course education is disadvantageous due to the school curriculum.

Acknowledgement

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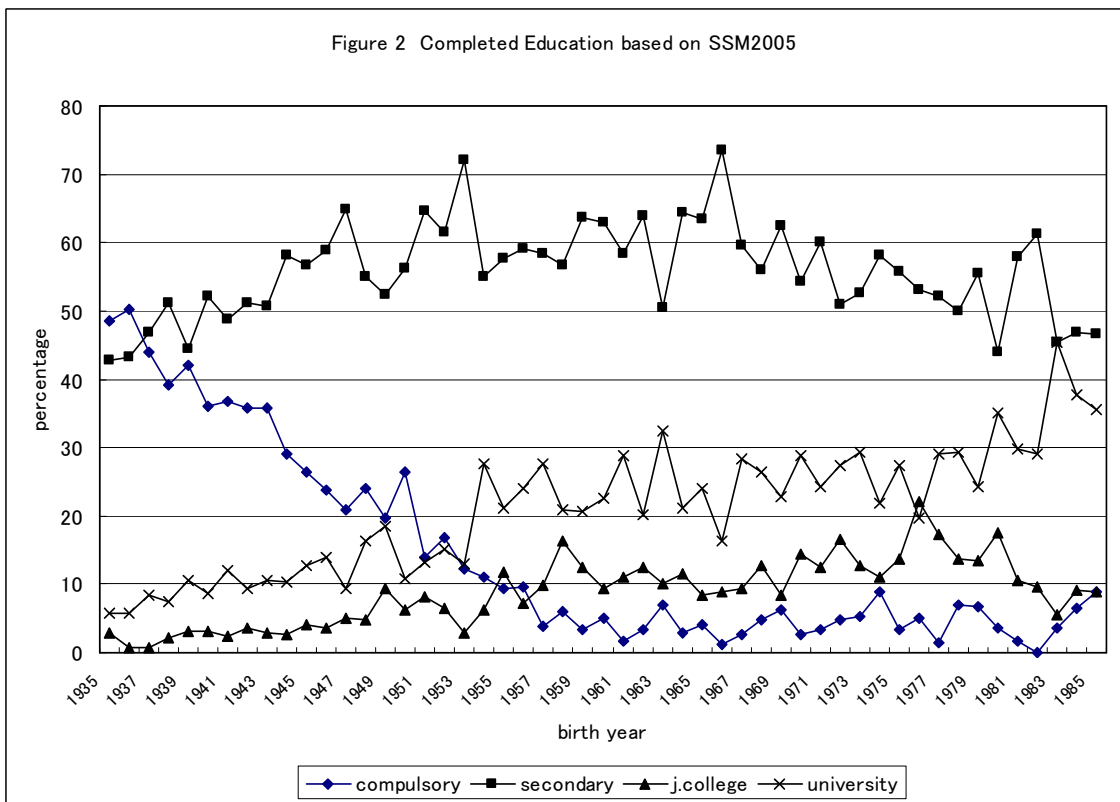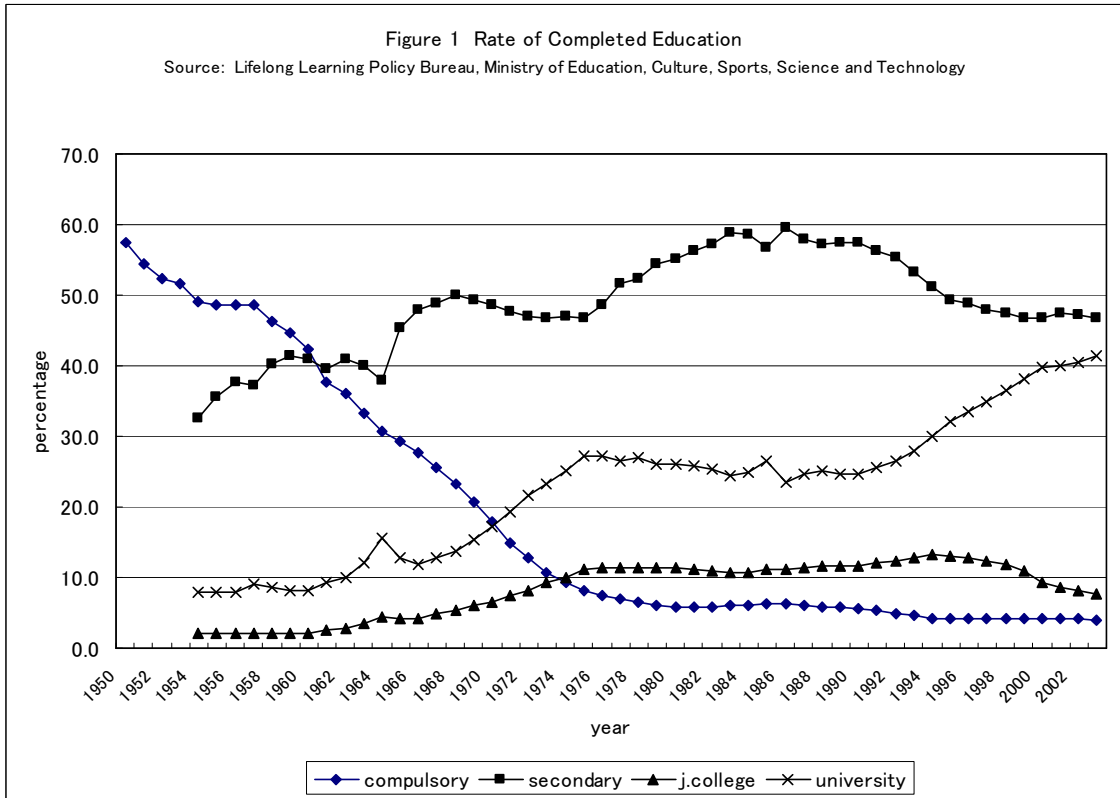
Figure 1 Rate of Completed Education
Source: Lifelong Learning Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology

Figure 2 Completed Education based on SSM2005

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Table 1 Three Dimensional Cross Tabulation– Educational Attainment

Respondent's education	Father's education	Mother's education					
		compulsory	secondary	j. college	university	don't know	sum
compulsory	compulsory	536	19	0	0	27	582
	%	92.1	3.3	0.0	0.0	4.6	100.0
	secondary	18	24	0	0	2	44
	%	40.9	54.5	0.0	0.0	4.5	100.0
	junior college	2	3	0	0	0	5
	%	40.0	60.0	0.0	0.0	0.0	100.0
	university	4	4	1	0	0	9
	%	44.4	44.4	11.1	0.0	0.0	100.0
	don't know	21	10	1	0	278	310
	%	6.8	3.2	0.3	0.0	89.7	100.0
	sum	581	60	2	0	307	950
	%	61.2	6.3	0.2	0.0	32.3	100.0
secondary	compulsory	1188	201	6	4	54	1453
	%	81.8	13.8	0.4	0.3	3.7	100.0
	secondary	164	595	19	7	39	824
	%	19.9	72.2	2.3	0.8	4.7	100.0
	junior college	25	46	19	0	7	97
	%	25.8	47.4	19.6	0.0	7.2	100.0
	university	11	91	19	16	7	144
	%	7.6	63.2	13.2	11.1	4.9	100.0
	don't know	62	71	10	4	534	681
	%	9.1	10.4	1.5	0.6	78.4	100.0
	sum	1450	1004	73	31	641	3199
	%	45.3	31.4	2.3	1.0	20.0	100.0
junior college	compulsory	81	27	2	0	4	114
	%	71.1	23.7	1.8	0.0	3.5	100.0
	secondary	19	158	8	0	8	193
	%	9.8	81.9	4.1	0.0	4.1	100.0
	junior college	0	17	6	0	0	23
	%	0.0	73.9	26.1	0.0	0.0	100.0
	university	2	50	17	4	2	75
	%	2.7	66.7	22.7	5.3	2.7	100.0
	don't know	5	6	1	0	44	56
	%	8.9	10.7	1.8	0.0	78.6	100.0
	sum	107	258	34	4	58	461
	%	23.2	56.0	7.4	0.9	12.6	100.0
university	compulsory	175	57	3	2	9	246
	%	71.1	23.2	1.2	0.8	3.7	100.0
	secondary	44	286	19	8	14	371
	%	11.9	77.1	5.1	2.2	3.8	100.0
	junior college	8	39	14	2	3	66
	%	12.1	59.1	21.2	3.0	4.5	100.0
	university	3	137	71	69	11	291
	%	1.0	47.1	24.4	23.7	3.8	100.0
	don't know	10	19	0	1	88	118
	%	8.5	16.1	0.0	0.8	74.6	100.0
	sum	240	538	107	82	125	1092
	%	22.0	49.3	9.8	7.5	11.4	100.0

Table2 Likelihood-Ratio Chi-Squares for Differing Latent-Class Models

Male born in 1935-1950

	L^2	d.f.	p
Independence model	218.300	72	0.000
Two-class model	55.553	60	0.639
Three-class model	36.289	48	0.892

N=1082

Female born in 1935-1950

	L^2	d.f.	p
Independence model	328.513	72	0.000
Two-class model	88.557	60	0.010
Three-class model	27.094	48	0.994

N=1234

Male born in 1951-1969

	L^2	d.f.	p
Independence model	189.962	72	0.000
Two-class model	77.059	60	0.068
Three-class model	34.640	48	0.926

N=988

Female born in 1951-1969

	L^2	d.f.	p
Independence model	285.561	72	0.000
Two-class model	92.222	60	0.005
Three-class model	42.199	48	0.704

N=1122

Male born in 1970-1985

	L^2	d.f.	p
Independence model	169.380	72	0.000
Two-class model	70.232	60	0.172
Three-class model	27.759	48	0.992

N=568

Female born in 1970-1985

	L^2	d.f.	p
Independence model	188.971	72	0.000
Two-class model	76.074	60	0.079
Three-class model	33.948	48	0.938

N=697

Table3 Maximum Likelihood Estimates of the Conditional and Final Latent Class Probabilities

Males born in 1935-1950

	Two Class		Three Class		
	Class1	Class2	Class1	Class2	Class3
Respondent: compulsory edu.	0.364	0.000	0.000	0.729	0.091
Respondent: secondary edu.	0.529	0.125	0.767	0.231	0.120
Respondent: junior college	0.018	0.036	0.000	0.040	0.039
Respondent: university	0.089	0.839	0.233	0.000	0.761
Father: compulsory edu.	0.704	0.229	0.719	0.706	0.078
Father: secondary edu.	0.021	0.419	0.022	0.000	0.559
Father: junior college	0.018	0.126	0.041	0.000	0.125
Father: university	0.011	0.184	0.013	0.004	0.229
Father: don't know	0.247	0.043	0.206	0.291	0.010
Mother: compulsory edu.	0.668	0.211	0.686	0.654	0.101
Mother: sedondary edu.	0.075	0.599	0.082	0.045	0.772
Mother: junior college	0.003	0.082	0.008	0.000	0.088
Mother: university	0.000	0.006	0.000	0.000	0.007
Mother: don't know	0.255	0.103	0.225	0.302	0.032
Final probability of latent class	0.837	0.163	0.461	0.401	0.136

Females born in 1935-1950

	Class1	Class2	Class3
Respondent: compulsory edu.	0.100	0.997	0.000
Respondent: secondary edu.	0.850	0.000	0.422
Respondent: junior college	0.041	0.000	0.300
Respondent: university	0.009	0.003	0.278
Father: compulsory edu.	0.580	0.625	0.094
Father: secondary edu.	0.166	0.026	0.262
Father: junior college	0.031	0.001	0.215
Father: university	0.000	0.006	0.429
Father: don't know	0.223	0.343	0.000
Mother: compulsory edu.	0.584	0.642	0.048
Mother: sedondary edu.	0.212	0.000	0.714
Mother: junior college	0.000	0.003	0.210
Mother: university	0.000	0.000	0.010
Mother: don't know	0.205	0.356	0.019
Final probability of latent class	0.621	0.294	0.085

Males born in 1951-1969

	Class1	Class2	Class3
Respondent: compulsory edu.	0.186	0.000	0.044
Respondent: secondary edu.	0.440	0.144	0.874
Respondent: junior college	0.039	0.062	0.000
Respondent: university	0.335	0.794	0.082
Father: compulsory edu.	0.644	0.104	0.147
Father: secondary edu.	0.000	0.524	0.530
Father: junior college	0.000	0.098	0.023
Father: university	0.011	0.270	0.000
Father: don't know	0.345	0.000	0.300
Mother: compulsory edu.	0.662	0.103	0.126
Mother: sedondary edu.	0.042	0.703	0.500
Mother: junior college	0.000	0.101	0.000
Mother: university	0.000	0.065	0.019
Mother: don't know	0.296	0.028	0.355
Final probability of latent class	0.416	0.300	0.283

(Table 3 Continued)

Females born in 1951-1969

	Class1	Class2	Class3
Respondent: compulsory edu.	0.006	0.132	0.000
Respondent: secondary edu.	0.827	0.751	0.149
Respondent: junior college	0.103	0.098	0.431
Respondent: university	0.065	0.019	0.420
Father: compulsory edu.	0.381	0.552	0.022
Father: secondary edu.	0.425	0.000	0.455
Father: junior college	0.064	0.007	0.097
Father: university	0.051	0.000	0.395
Father: don't know	0.079	0.442	0.032
Mother: compulsory edu.	0.407	0.563	0.030
Mother: sedondary edu.	0.540	0.000	0.743
Mother: junior college	0.036	0.000	0.091
Mother: university	0.000	0.004	0.070
Mother: don't know	0.018	0.433	0.067
Final probability of latent class	0.428	0.406	0.166

Males born in 1970-1985

	Two Class		Three Class		
	Class1	Class2	Class1	Class2	Class3
Respondent: compulsory edu.	0.084	0.000	0.004	0.160	0.000
Respondent: secondary edu.	0.692	0.196	0.600	0.666	0.180
Respondent: junior college	0.033	0.000	0.042	0.011	0.000
Respondent: university	0.191	0.804	0.354	0.162	0.820
Father: compulsory edu.	0.233	0.019	0.077	0.379	0.000
Father: secondary edu.	0.438	0.370	0.863	0.046	0.070
Father: junior college	0.000	0.046	0.000	0.000	0.070
Father: university	0.063	0.566	0.017	0.108	0.860
Father: don't know	0.265	0.000	0.043	0.467	0.000
Mother: compulsory edu.	0.168	0.006	0.059	0.256	0.009
Mother: sedondary edu.	0.529	0.545	0.881	0.194	0.349
Mother: junior college	0.034	0.198	0.015	0.052	0.295
Mother: university	0.017	0.224	0.045	0.000	0.303
Mother: don't know	0.253	0.028	0.000	0.497	0.044
Final probability of latent class	0.692	0.308	0.448	0.351	0.201

Females born in 1970-1985

	Class1	Class2	Class3
Respondent: compulsory edu.	0.000	0.099	0.000
Respondent: secondary edu.	0.556	0.810	0.093
Respondent: junior college	0.422	0.000	0.051
Respondent: university	0.022	0.091	0.856
Father: compulsory edu.	0.119	0.402	0.017
Father: secondary edu.	0.593	0.316	0.378
Father: junior college	0.022	0.002	0.049
Father: university	0.178	0.000	0.498
Father: don't know	0.088	0.280	0.058
Mother: compulsory edu.	0.129	0.396	0.000
Mother: sedondary edu.	0.667	0.413	0.543
Mother: junior college	0.096	0.019	0.207
Mother: university	0.000	0.027	0.204
Mother: don't know	0.108	0.145	0.046
Final probability of latent class	0.509	0.290	0.201