

**Topic-Setting Program to Advance Cutting-Edge
Humanities and Social Sciences Research**

(Responding to Real Society)

Progress Report
(Summary of Final Report)

[An Empirical Study of the Effects of Educational Investment and Cognitive
Development of Children on their Outcomes as Young Adults Including Motivation to
Learn, Employment, and Earnings]

Core-Researcher: Hideo Akabayashi

Institution: Keio University

Academic Unit: Faculty of Economics

Position: Professor

Research Period: FY2013 - FY2015

1. Basic information of research project

Research Area	Evaluation on the Social and Economic Effects of Education Policy
Project Title	An Empirical Study of the Effects of Educational Investment and Cognitive Development of Children on their Outcomes as Young Adults Including Motivation to Learn, Employment, and Earnings
Institution	Keio University
Core-Researcher (Name, Academic Unit & Position)	Hideo Akabayashi (Faculty of Economics, Professor)
Project Period	FY2013 - FY2015
Appropriations Plan (¥)	FY2013 JPY 2,996,000
	FY2014 JPY 4,951,000
	FY2015 JPY 1,837,000

2. Purpose of research

Faced by a declining population, it is essential to enhance and maintain individual labor productivity after formal schooling for sustainable growth in the Japanese economy. It is still not fully understood how school education and the family environment are related to continuing incentives for human capital investment while in the labor market. One clear reason is that there have been no systematic data in Japan that allow one to directly analyze the relationship between cognitive development, family background, motivations to learn while in the labor market, and economic well-being. In this study, we conducted a survey that covers the age range from late-teens to early thirties and asks participants about their detailed educational background, family background, labor market experiences, and motivation to study using two samples with distinct characteristics. One sample is of young twins maintained by the Keio Twin Study, and the other is a sample of children from the Japan Household Panel Survey (JHPS) collected by the Panel Data Research Center. Furthermore, we conducted a field experiment in collaboration with private educational companies that examines how differences in learning incentives can emerge. We hope our study will inform education and labor market policy makers of effective policy alternatives that can increase human capital investment among youths.

3. Outline of research (Including study member)

We conducted two postal surveys and analyzed their data. The first survey was conducted among a nationally representative sample of children of the JHPS respondents over 18 years old at the time of the survey. We call this sample “Second Generation sample of JHPS,” or the JHPS-SG sample. Some among the JHPS-SG sample were surveyed previously as the targets of the Japan Child Panel Survey when they were 14-15 years old concerning their cognitive and non-cognitive skills. The previous survey information is important since it allows us

to examine the effect of various skills fostered during the formal schooling years in determining the continuation of study.

The second survey was carried out among a sample of young adult twins living in the Tokyo area who have been registered with the Keio Twin Study (KTS). The twin sample is important since it allows us to control for genetic and family environmental factors in determining the motivation to study after formal schooling. The data collected in the survey were combined to the dataset the KTS had previously collected, and combined data analyses were conducted.

As part of their compensation, the respondents of our postal survey for both JHPS-SG and KTS samples received vouchers that could be reimbursed and used as discount coupons for selected adult education courses provided by private companies which participate in the Japan Association of Personnel Ability Development (JAD). The courses, which included remote education programs, covered various kinds of job related training courses such as English, computers, accounting and law, and other learning courses for several professional certificates. For the administration of the distribution of vouchers, we obtained advice from the experts at the Chance for Children, an NPO which has years of experience in supporting children with education vouchers that can be used for private afterschool enrichment programs.

The following researchers participated in this project.

Participating Researchers (Affiliation and field of specialization in the parenthesis)

- Principal Investigator

Hideo Akabayashi (Keio U., Economics),

- JHPS-SG group

Yoshio Higuchi, Michio Naoi, Soichi Ohta (Keio U., Economics), Shiho Yukawa (Teikyo U., Economics)

- KTS Survey group

Juko Ando (Keio U., Education), Chizuru Shikishima (Teikyo U., Psychology), Shinji Yamagata (Kyushu U., Psychology)

- Voucher Administration Advisors

Yusuke Imai and Satoshi Okuno (The Chance for Children)

4. Research results and outcomes produced

(1) JHPS-SG sample

For the JHPS-SG sample, we obtained 825 valid cases. Among these samples, only 7 respondents redeemed the education voucher. The average age of those who redeemed the voucher was 31. When we compared the background of those who redeemed it and those who did not, we found that those who are female, married, and employed as regular workers, have more desire to study, and are experienced with college entrance exams, are more likely to redeem the voucher. This result was not changed even when we restricted our sample to those who did not enroll in school.

As the result of our multivariate analysis of the desire to study, we also found that

education level, mother's education and household income tend to have significant effect on the desire to study. Similar results are found also for the activity to study. We did not find evidence that the retrospective evaluation of cognitive skills and after-school program participation at grade 9 do not affect study activity or the desire to study after 18.

Finally, using the sample who participated in both JHPS-SG and JCPS survey at the age of 14-5 (N=106), we analyzed whether the cognitive and non-cognitive skills measured at grade 9 affected the activity and desire to study or not. We did not find evidence that cognitive and non-cognitive skill measures affect either the study activity or desire after controlling for several family and individual background variables.

(2) KTS sample

We obtained 1101 valid twin cases (471 complete twin pairs). The age of the participants ranged from 22 to 49 and 76% of the sample was female. Among those, only 7 respondents redeemed the education voucher. The sample size was too small to apply the twin method. The average age of those who redeemed the voucher was 32.

The level of activity to study was higher for those with higher educational achievement, higher income level, higher occupational status, higher retrospective school grade at the age of 15, and higher IQ score. The level of desire to study was higher for those with higher educational achievement, but less influenced by other factors.

For psychological traits, we found significant differences between the high and low groups of the level of activity to study. For the high group, extraversion, subjective well-being, self-esteem, and mental health were higher. However, the differences were not significant or smaller when we compared between the high and low groups of the level of desire to study.

We also conducted behavioral genetic analysis using the twin method. We found that the genetic factors of educational achievement and the activity to study were identical, suggesting that genetics of study are common regardless of formal and informal education. For the desire to study, however, we found the specific genetic factor not explained by the genetic factor of educational achievement, which implies that environmental settings apart from schooling are needed to account for the individual desire to study.