

# **GCOE Discussion Paper Series**

Global COE Program

Human Behavior and Socioeconomic Dynamics

**Discussion Paper No.79**

**How do high school graduates in Japan compete  
for regular, full time jobs? An empirical analysis  
based upon an internet survey of the youth**

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August 2009

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# How do high school graduates in Japan compete for regular, full time jobs? An empirical analysis based upon an internet survey of the youth\*

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August 26, 2009

## Abstract

We use a survey of the Japanese youth within 10 year after high school graduation to investigate the impacts of the academic and social skills on their success in the job market. We find three major factors account for the job market outcome immediately after school: school characteristics and job placement services, academic performance, and social skills, including the negative impacts of problematic behaviors at the school. Second, when we run a Probit regression on whether or not the surveyed individuals hold regular, full time job, we find the persistent but declining (over age) impact of the job placement immediately after school. Moreover, we find the impact of variables pertaining to the social skills remain significant even after controlling for the job placement outcome after school, whereas other variables such as GPA or attributes of highschools are largely irrelevant to the current employment status.

## 1 Introduction

In much of the postwar years in Japan, the job market for new school graduates had been institutionally separated from the rest of the labor market. Two institutional features are critical in shaping the separation of the market for the new school graduates. First of all, virtually all the firms in Japan, except for very small (say, less than 10 employees), adopted dual recruiting system, one for the new school graduates, and the other for those already in the labor market. The division between the two are both procedural as well as substantial. The recruitment of new school leavers are controlled by the personnel department. As such, they are not strictly based upon existing vacancies. Rather, their

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recruiting policy is guided by long term plan of the firm, projecting the future manpower demand within the firm. On the other hand, those hires rather than the new school leavers are ad hoc and virtually all the hires are based upon immediate and existing vacant positions.

*Syokugyo anteisyo*, or, regional public employment offices jointly with regional high schools have been instrumental in organizing the market for the new school graduates. Specifically, they make considerable efforts soliciting job offers from firms within the region, organizing meetings with teachers in charge of job placements, and in recent years, organizing "job fairs". Among other things, it is important to take note that those openings thus solicited are made available only to the students in the last year of schools.

It is then not surprising that getting the first job through this channel of school placement office and regional employment office is by far the best and most popular means by which school leavers obtained their first jobs immediately after the school. Genda and Kurosawa (2001) shows that indeed that matches created in this manner is on average of better quality, longer lasting ones.

There is no doubt that years of long stagnation of the economy during the last decade of the 20th century left visible scars on many segments of the economy. The labor market was no exception. Ariga (2006) documents and analyzes the deteriorations of match quality during the period in the market for the new high school graduates.

This paper makes use of a unique survey of the youths we conducted in February 2008 . The survey is conducted using the internet and we corroborated with an internet portal website which is very popular among the younger generations in Japan. We solicited participations to the survey among the member of the portal site. One of the unique feature of the survey is the extensive list of questions on the last year at the high school. Since we limited the participants to those who did not go to college, for a great majority of the participants, the last year in high school is the last year before they entered the labor market.

We investigate two key questions pertaining to their attachment to the labor market. First, we revisit the question asked in Genda and Kuroda on the factors responsible for the success in their job placement immediately after the high school. We do so by employing a much richer set of covariates than done in the past. The second key question is how the impact of the first job (possibly) erodes over time and how other factors influence the current employment status.

Our main findings are in three holds.

First, we find three key contributing factors for the success in regular and full time employment immediately after the school: high school characteristics including the quality of job placement assistance, non-cognitive social skills, and academic performance (in that order in terms of relative contributions). Second, whether or not they obtained regular full time jobs immediately after school does matter for the current employment status. The impact erodes over time, and the effect all but disappears after 10 years. Finally, non-cognitive social skills continue to have impact on employment probability even after controlling for the outcome of the job search immediately after school. On the other hand,

neither academic performance or other variables on their last year in high school matters for the current employment.

The sequel of the paper is organized as follows. In Section 2, we introduce the survey itself and characterize the sample individuals during their last years in high school, as well as the current labor status and other attributes. Section 3 reports the two main sets of empirical analysis, one on the factors responsible for the success of regular full time employment immediately after the school, and the other on the persistence of the impact of high school job placements on the subsequent employment. Section 4 offers a brief conclusion.

## 2 Internet Survey of the Youth in Japan

In February 2008, we surveyed 2329 individuals with age between 17 and 27 (ISYJ: *Internet Survey of the Youth in Japan*). We solicited participants to the survey through one of the internet site called *Goo*, one of the most popular portal among the youth in Japan. We restricted participants to be in the last year of high school or older, but not older than 27 of age. We excluded those either currently enrolled or graduated from (either 2 year or 4 year) colleges as our primary focus of the survey is on the subset of the young population in Japan who are reputedly facing difficulties in school to work transitions. We included graduates (or dropouts) from vocational colleges (*Senmon-Gakko*), which typically entails two years of schooling. Although we do think some of the issues faced by our survey participants are shared also with college graduates, our exclusion of college graduates is justified by variety of data and studies indicating the problems are far more severe among the youths without college education. The English translation of the questionnaires used in the first and follow up surveys are given in Appendix.

### 2.1 From school to work transition in Japan

After 9 years of compulsory education, 98% of junior high school graduates in Japan go to senior high schools. In the most recent years, more than 50% (52.8% in 2008) of high school graduates go to either 2 year or 4 year colleges. Those who start working immediately after high school is now a distinct minority, comprising less than 20% (19.0% in 2008) of the total graduates. In 2008, 15.3% of high school graduates went to vocational colleges. Therefore even if we limit to high school graduates who are not college bound, less than a half of them start working (excluding part time jobs) immediately after the school<sup>1</sup>.

During the high growth era in Japan, job placements of high school graduates were supported and facilitated by the strong ties between high schools and local employers, sometime mediated through regional public employment offices. Each school solicit and collect job openings for the graduating students

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<sup>1</sup>Up until early 1990s, the majority of high school graduates started working immediately after graduation. Ariga (2006) looks into the factors responsible for the major changes during the 1990s in the market for high school graduates.

towards the end of the first semester (July). The formal job exams are held in early September and schools ask students to decide which job opening to apply before the formal exam. Teachers in charge of job placements advise and make suggestions on the application. For popular job openings, each school pre-screen students so that by September, students will pick only one place to apply with the approval and formal recommendations by the school master<sup>2</sup>.

During the lost decade, the market for the new high school graduates shrank its size to less than a half. In 1990, 35.2% of high school graduates obtained regular, full time jobs, whereas in 2000, only 18.6% did. Since 1.8 million students graduated in 1990, whereas only 1.4 million graduated high schools in 2000, the number of graduating students with regular full time jobs declined to roughly 2/5th during this ten year period. The market base eroded during the period both from the supply and the demand side. The period coincided with rapid decline in high school age population as the 1990 marked the peak of the second baby boom population. The rapid increase in college enrollment also took place at least in part due to the loosening of the regulation on the establishment of colleges in the mid to late 1980s. Needless to say, the decade long stagnation of the economy brought precipitous decline in the demand for high school graduates.

The population covered in our survey finished high school between 1999 to 2008. Roughly speaking, since the burst of the bubble in the early 1990, the market for new high school graduates continued the decline and bottomed out around 2003, but remained slow after that. Only in the last two to three years, we find some mild recovery in the job openings for the new school graduates.

Not only the slow labor market but also the institutional changes made it increasingly difficult for high school graduates to land on a regular, full time job<sup>3</sup> immediately after graduation. As the share of college bound students increased, many high schools shifted their resources away from job placement to preparation and assistance for college entrance exam. Vocational high schools<sup>4</sup> lost popularity and many added new academic courses for college bound students. The slow labor market and gradual erosion of the institutional setting assisting the transition jointly contributed to the overall decline of the market. It is against this background that the sample youth finished their high schools and started their career in the labor market.

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<sup>2</sup>For these job openings posted through high school job placement services, the applicant needs a formal letter of recommendation by school master. High schools typically apply strong moral persuasion to ration the applicants to popular positions so that the number of applicants from a school to each position matches the number of openings allotted to each school by the employer.

<sup>3</sup>A job is *regular* [*Joyo*] (as opposed to ad hoc [*Rinji*]) if the employment contract is without fixed term.

<sup>4</sup>In Japan, vocational high schools are on equal footing with regular high schools as the pre-requisite for colleges.

## 2.2 ISYJ: A Brief Review

Table 1 shows the education background of the sample individuals by sex. The majority (52%) of the sample are high school graduates, followed by 40% of vocational college graduates. One unexpected result of the internet survey is the heavy concentration of female, comprising 71% of the sample.

One of the distinguishing characteristics of ISYJ is a set of detailed questions on various aspects of their lives during their senior year at high schools. Our expectation is that these facets of their lives in the last year of high school shaped and influenced in important manners the subsequent successes and failures in the labor market, and more generally, their success in the assimilation to the society outside their schools and homes.

### 2.2.1 How they spent the last year at high school

Then, let us begin the review of our survey by tabulations of responses to the questions on their last year at the school, which is senior high school, for most of our sampled individuals. Table 2 shows the type of high schools attended. More than 70% attended public high schools. Slightly more than 60% took academic courses, and remainder were distributed over various vocational concentrations (commerce, industry-craft, agriculture, etc.). Even though none of the survey participants went college, 18% of them took academic concentration courses designed primarily for those taking college entrance examinations<sup>5</sup>. The share of college bound course is especially large among those enrolled at vocational high schools<sup>6</sup>.

Table 3 shows distribution of self reported GPA (highest=5, lowest=1). As can be seen from the table, there is no immediate association between high school grades and subsequent education/career choice. As a matter of fact, if anything, GPA is somewhat higher for those who did not go to vocational college after high school. Table 4 tabulates subjects which they liked /hated. We listed 14 subjects most commonly offered at high schools in Japan and asked to pick (any number of) favorite subjects, and those sample individuals hated. Table 4 shows the variations across subjects. As expected, mathematics is the subject hated most (53.4% of the sample hated the subject). The Japanese came out as the most popular: 41% said it was their favorite subject. Somewhat unexpectedly, mathematics is also the second most popular. Home economics and information sciences are hated least, although they are not particularly popular either. We construct the variable *score* which is simply the total number of favorite subjects minus the sum of subjected they hated.

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<sup>5</sup>It is a common practice among high schools in Japan to divide the students in their senior year into college bound and career track. Thus even if students are mixed as to their future courses, each group are organized into separate classes with different curriculum.

<sup>6</sup>This may sounds contradictory, but, in Japanese high schools, it is not at all uncommon that vocational high schools have classes allotted specifically for college bound academic concentrations. Many vocational high schools started such classes in 1990s to lure students seeking college education as the vocational high school became unpopular as the share of college bound students increased during the period.

Table 5 offers a summary of the major indicator of the variables relating to the participants' self evaluation of the 3 years in high school. Roughly 30% of the surveyed consider the time spent at high school enjoyable and rewarding, whereas 10% choose "I am glad that the time is over", and 20% choose "it was uneventful and largely forgettable." Although the difference is not large, the female respondents seem somewhat more positive than the male.

We run regressions for a simple ordered probit model to see important factors contributing to the overall self assessment of the high school life. See Table 6. Many of the variables in the table have easily discernible impacts on their self assessments. Higher GPA, taking parts in extracurricular activities, having many favorite subjects are among the list of factors which contributed to enhance their assessments. Naturally, the experience of being absent from school for extended period of time had clear negative impact. The same applies to repeated experiences of late or absent from school.

In the first block, we have a set of variables for high school characteristics and the curriculum. The results indicate the overall satisfaction levels are lower at day school, compared to other types (night schools, and correspondence courses), and also lower at public, rather than private schools. Other attributes such as academic or vocational, whether or not the majority of students go to college, etc., do not have significant impacts.

In the second block, we list three variables measuring the academic performances, over all GPA (self assessed), average number of hours studied outside schools (either at home or at *Jyuku*), and the variable *score*. As it turned out, this variable consistently have significant impact. On the other hand, GPA has only marginally significant impact.

In the third block, we have a set of variables related to the time allocation when they were in the last year at high school. Two variables stand out as the important determinants: *timespent\_friends*, *timespent\_bukatsu*, and *timespent\_otheradults* are all highly significant and exert positive impacts on self evaluation. As is well known, the extracurricular activities, *bukatsu*, have unique and important place in Japanese high schools as they typically require commitment and a large amount of time devoted. For many, *bukatsu* is often the dominant part of their school life. The regression results support the thesis that students heavily involved in *bukatsu* tend to have sense of achievement and satisfaction.

In the fourth block, we have variables related to the friends. Naturally, those who answered that they (at the moment of the survey) have many friends from high-school days, view the high school years worthwhile. On the contrary, those with many friends before high school have the opposite views. Naturally, those with many of those friends still in constant touch view the high school days more positively. Finally, their assessment of high school life is higher if they had boy (-girl)friends.

As can be seen from the  $R^2$  statistics, much of the explanatory powers are drawn in by variables in these four blocks, and those in personal characteristics and family back ground add relatively little. Still some of the variables have significant coefficients: *Fincomeat15*, index variable ranging from 1 to 10 for the

family income at age 15, has positive impact, i.e., the students from more well to do families find their high school life more valuable; for whatever the reasons, students with younger (older) father (mother) find that their high school years was a worthwhile experience.

All in all, Table 6 offers no big surprise: those in our survey place relatively little weight on grades in evaluating their high school life. Interactions with friends, times spent in extra curricular activities (*bukatsu*), whether or not they had girl (boy) friends matter far more than their academic standing.

### 2.2.2 Their current employment status

One unintended outcome of using the internet portal as the basis of the survey is the concentration of female, roughly 70% of the participants, which is close to the member profile of the portal. Among male, 18% of them are married, whereas roughly 40% of female participants are married.

Among the female, 80% of those currently working are still single, whereas 3 out of 4 non-working females with prior work experiences are married, indicating many married female participants exited from the labor market after marriage. Not surprisingly, 80% of those married female with past work experiences have kids. 22<sup>7</sup>, or 3% of female participants are single mother, i.e., currently not living with a partner and have kids.

In Table 7, we summarize the current labor market status: Among male, slightly more than the majority retain full time permanent jobs, and about a quarter of them are working under different employment contracts. Among female participants, only about 30% of them work as full time and permanent employees. Roughly equal share of them work in other form of employments. Overall, the attachment to the employment is still on shaky ground for many of the sampled individuals. Given the participants ages, this may not be surprising and comparable to those for the youth in Europe. On the other hand, there are indications that tenuous link to the labor market for these youths in our sample may differ in important ways from those found among youths in other developed countries.

For one thing, there is no apparent trend that over age their attachment to the labor market becomes more firm. Table 8 shows that except for the age below 21 or 22, there does not seem to be any systematic age variations in the share of full time permanent employees. Upon closer look, we find, however, the average is misleading. If we divide the sample across sex, for male, we do find steady upward trend of the share of regular full time employees starting from about one third around at early 20 up to above 60% by late 20s, whereas among the female samples, upward trend is virtually non existent, or very weak. The highest share is found at age 21. Right hand panel of Table 8 reveals even more striking heterogeneity. If the survey participants started off their employment career by getting a regular full time job immediately after finishing school, the share of regular, full time employment remains high above 80% for until early

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<sup>7</sup>Only one male has a kid and not living with a partner.



20's and then the initial impact apparently erodes. By the end of their 20's only about a half of them retain the same status. For those who did not get the full time permanent job after school, their share remains low for quite some time but it gradually increases from mid 20's. By the end of 20's, their share increased to about 35%, still short of the corresponding share among the first group.

To sum up, two general observations can be made. First of all, the attachment to employment is not strong among the sample individuals in the survey, even for male. The attachment is much weaker for female. Second, the employment is substantially more stable for those who obtained a regular full time job immediately after school.

## 2.3 Key Questions

Base upon preliminary analysis of the survey data, in what follows, we confront the two key questions.

1. What are the factors accounting for the successful transition from (high) school to work? How important are the cognitive and non-cognitive skills. Are the family environments shape the ability to assimilate themselves to the society in general, and to the working life, in particular?
2. How those who did well in the first job placement over years lost the advantage? In other words, if they quit the first job, does the impact of the first job evaporate? Conversely, what are the key factors responsible for successful transition to the work for those who did not do well in the market for the new entrants?

# 3 The Econometric Analysis

## 3.1 Results (1) Job placement at school

### 3.1.1 Main Results

Table 9A reports the main results. The probit estimate offers a highly sharp picture on what it takes for the high school students to be successful in getting a stable job. Extreme left column shows the determinants of the probability of landing on a regular full time job immediately after the school among those who did not choose to continue school (to college or *senmongakko*). The dependent variable, *seisyain-syusyoku* takes the value 1 if the respondent obtained a regular full time job immediately after graduation, is zero otherwise. Slightly less than a half of the sample, about 1,100 respondents are covered in the regressions. We categorize the variables into 8 blocks: school and curriculum attributes and school placement services, labor market tightness conditions for new school graduates, academic performance in the senior year at high schools, problematic behaviors at schools, time spent on various extracurricular activities, types and number of friends, personal traits of the respondents, and family back ground.

Equation 2-through 9 can be compared vis-a-vis the full specifications in equation 1 to obtain marginal contribution of respective group variables in pseudo  $R^2$ . Their respective contributions are shown in parenthesis. As it turned out, the largest contribution is found for school characteristics, followed by variables in time allocation, and family background.

We start with variables in the school characteristics. We find significant positive impacts on the dependent variable by: *zenjitsusei* [day schooling, as opposed to night-time or correspondence classes], *koritsu* [public, as opposed to private schools], and if the respondents was in classes primarily for students seeking jobs after school [as opposed to those primarily for college bound or mixed]. Not surprisingly, vocational high schools fare better in placements so the impact of attending a *hutsuka* [academic track] high school is negative. The impacts by school placement services are also highly significant and quantitatively important: *sinrosido* counts number of various placement related activities which respondents recalled that their school organized, whereas *sinromissed* counts those events which respondents did not attend. We also find the negative impact from the time they needed to commute to their school [*comtime*].

Not surprisingly, the school grade and attendance matters. Once we control for GPA, none of the variables measuring other aspects of academic studies really matter: whether or not any particular subject, e.g., math, was their favorite, or they hated it, does not have any significant impact. The variable *hourstudy*, measuring the hours of study at home or at *kyuiku* actually carry negative effects on the success in the job market, and some of them are marginally significant. The impacts of variables in problematic behaviors at schools are also as predicted. Those who reported they were often late or missed schools [*chikokukesseki*] tend to have lower chance of landing a regular full time job after school. Similarly, extended period of absence [*hutoukou*] is also highly significant. On the other hand, *ijime* [bullying at school] does carry negative coefficient but never statistically significant. The relative importance (seriousness) of extended absence, as opposed to bullying, is a well established fact among school counselors, and our regression results confirm their finding in a different perspective.

The variables in the next two categories, time allocation and friends, are intended to capture the characteristics of the daily life in the last year at high school. We find strong indication that those who are active at schools and sociable tended to fare significantly better in job placements: *friendsatHS*, *BFGF*, *timespents\_bukatsu* are all highly significant and positive, indicating that many friends at high school, having time spent on extracurricular school activities, having boy (girl-) friends all contributed significantly to the success in the job market. Moreover, both part time work and doing house chores also carry positive impacts. We find the negative impacts by variables representing the tendency that their primary interests and focus were outside the school. If they had many friends from earlier periods [*friends\_beforeHS*], or at part time work, or they spent long time in their own hobby, or *naraigoto* [e.g., attending piano lessons, English classes, outside schools], they are less likely to be successful in the job market.

Most of variables in personal characteristics do not appear to be significant in the regressions. There is some indication that risk aversion tended to have negative impact [*risk*] but evidence is not very strong. Male students on average had somewhat higher probability of the success, but the impact is relatively small. Although variables in family background category jointly contribute significantly in explaining the outcome, most of individual variables are not significant. We find, however significant impacts of their mothers. [If mother is dead or older (relative to their own age), they have lower probability of success].

We take away three strong messages from these regression analysis. First of all, what type of schools they attended do matter highly significantly to their success in the job market after graduation. This is consistent with the important role of Japanese high schools in the job placements. Second, we find important impacts of social skills as proxied by the activeness and strong ties to fellow students. This is also confirmed in the negative impacts of indicator variables representing isolation in schools. Finally, we find the work experience even house chores does have significant positive impact.

Figures 1 through 3 show the box plots of the predicted probability conditional on the value of three variables, GPA, *timespent\_bukatsu*, and *sinro-sidou*. Measured in the median (50% tile), those with highest GPA(=5) have 60% probability of landing a regular full time job after the school as opposed to about 30% with the lowest GPA. The impact is much larger for *sinrosido* variable. If they attended a school which organized all six types of placement meetings/seminars, roughly the predicted median probability is 75%, as opposed to about 20% if they attended a school which organized none. Figure 2 shows the impact of participation in various extracurricular activities. Those who are most active has a median probability about 65%, as opposed to 30% for those who did not participate at all.

### 3.1.2 Correcting for Selectivity Biases

Our analysis so far assumed exogeneity by the decision of sample individuals in the last year at high school on whether or not they continue to college or other education institutions after high school. Clearly, the assumption is dubious at best. As we already indicated, our analysis so far focused on sub-samples who decided not to continue schooling after high school. About half of the sample individuals in our survey did not choose to search for job after school either because they went to technical (vocational) college [ typically 2 year term] or other types of schools after high school, although our survey excluded by design those who went to college.

To correct for the selectivity bias introduced by the endogeneity of this decision, we modified the base line regression model to include Heckman correction term. At the extreme right column of Table , we show the probit estimation of our base line specification with Heckman correction for the selectivity bias. In Table 10, we show the selection equation. We notice first that the selectivity correction retain the qualitative features of the base line results, whereas some of the variables, especially those in family background blocks now become

statistically significant.

This makes sense as these variable perform as good predictor of the decision on whether or not to enter the job market after school:

## 3.2 Results (2) Job stability

### 3.2.1 Main Results

The second question on the success in the job search at high school is its impact on the subsequent employment. We ask how persistent the impact of the success or the failure is on the employment in later years.

Regression results (1) and (9) in Table 11 report our main results. Our left hand side variable is a dummy equal to unity if the sample individual currently holds a regular full time (*seisyain*) job. To represent the impact of the outcome of the job search during the high school, we use *seisyainsyusyoku*, which is unity is they obtained a *seisyain* job immediately after the graduation. The second variable is the interaction of the variable and the years since the graduation from high school. In equations (1)-(8), the entire samples are used for regressions, whereas in equations (9)-(16), we only used samples who did not go to vocational colleges (*senmon gakko*). The two groups of regressions are qualitatively similar.

We find the high school job placement outcome to have consistently positive impact on the probability that they currently hold a *seisyain* job. The negative impact of the second variable shows that the impact declines over age. In the first set of regressions that we use all the sample, the estimated coefficients indicate that the impact disappears after 10 years. Figure 4 illustrates the positive but declining impact of the success in the job search during the last year in school. The Box plot also shows the heterogeneity in the probability increases over age within each group. In the second set of regressions, we limit the sample to those who attended vocational college after high school. The cross product term become insignificant although the qualitative feature of the regressions remain largely the same. The impact of age itself has positive and significant for female, and the impact is even larger for female, suggesting the sample individual gradually assimilates into the society and find stable jobs as they age. Not surprisingly, the impact of marriage has diagonally different effects on male (positive and significant) and female (negative and significant).

In equations through (2)-(8) [(9) -(16)] we checked if the major variables representing high school characteristics, academic and social performances at high school, and family background have any impact beyond those through *seisyainsyusyoku*. Overall, most of the variables are insignificant. None of the variables in the school characteristics group except only for the positive impact of school being a day school (not night or correspondence course), and the school is perceived as the mixed students (those college bound and on career tracks). The same is true for academic performance, although in one regression GPA carries marginally significant positive impact. Similarly, none of the variables in family background or personal traits enter significantly in the regressions. The only exception is a dummy variable for father jobless or retired, which carry a nega-

tive significant coefficient. On the other hand, the variables in the problematic behaviors at high school continue to have strong and significant impacts on current employment, even after controlling for the job placement outcome after the school. Problems in assimilations and being punctual at schools apparently carry its impact well beyond the high school and high school job placements. Although the impacts are smaller and less significant, the time allocation variables continue to play important role in the current employment. The time spent on extracurricular activities continue to be significant and positive on the current regular full time employment. Part time job experiences also continue to have positive and significant impact as they did for the job placement immediately after school. The over all picture is similar for group of variables related to friends. Those who have many friends at part time job has significantly lower probability being at regular full time work. The impact of having friends from clam school now have positive and significant impact (the coefficient is positive in job placement at school regression but not significant). having boy friend or girl friend at high school continue to have positive significant impact.

The underlying message seems clear. School characteristics, personal traits, and academic performance are all important determinants of job placement outcome at high school, whereas they are largely irrelevant in the current employment status. On the other hand, a variety of variables pertaining to aspects of social skills continue to play significant role in the determination of current employment type and status.

### 3.2.2 Dealing with the endogeneity of the first job outcome: the maximum likelihood estimation method

The key explanatory variable, *seisyainisyusyoku*, is an endogenous variable. Consider a recursive structure in which *seisyainisyusyoku*, and the current job status, *seisyain* are determined.

$$\begin{aligned}
 y^i &= Z^{1i}\beta^1 + \gamma_1\tilde{s}^i + \gamma_2\tilde{s}^i(\text{age} - 18) + \varepsilon^1 \\
 s^i &= I[y^i \geq \bar{y}] \\
 x^i &= Z^{0i}\beta^0 + \varepsilon^2 \\
 \tilde{s}^i &= I[x^i \geq \bar{x}]
 \end{aligned}$$

wherein we assume

$$\begin{aligned}
 \epsilon &\equiv (\varepsilon^1, \varepsilon^2) \sim N(0, \Sigma) \\
 \Sigma^2 &= \begin{bmatrix} \sigma_1^2 & \sigma_1\sigma_2 \\ \sigma_1\sigma_2 & \sigma_2^2 \end{bmatrix}
 \end{aligned}$$

The system of equations given above cannot be estimated using a conventional statistical package routine. Since  $\tilde{s}^i$  is itself a binary random variable,  $y^i$  is necessarily correlated with  $x^i$  even if two error terms,  $(\varepsilon^1, \varepsilon^2)$  are mutually

independent. One idea is to use an IV method for  $\tilde{s}^i$  in the first equation. This is problematic if  $(\varepsilon^1, \varepsilon^2)$  are correlated because what we can do is to have a  $\hat{x}^i$  orthogonal to  $\varepsilon^1$ , which is not a prediction of  $\tilde{s}^i$ . Bivariate probit cannot do the job either because the first equation includes the left hand side variable in the second equation.

Here we estimate the parameters in the system using maximum likelihood. Let

$$\begin{aligned}
p^{11} &\equiv pr(s^i = 1, \tilde{s}^i = 1) \\
&= pr \left[ \begin{array}{l} Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18) + \varepsilon^1 \geq \bar{y} \\ Z^{0i}\beta^0 + \varepsilon^2 \geq \bar{x} \end{array} \right] \\
&= pr \left[ \begin{array}{l} \varepsilon^1 \geq \bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18)) \\ \varepsilon^2 \geq \bar{x} - Z^{0i}\beta^0 \end{array} \right] \\
&= \int_{\bar{x} - Z^{0i}\beta^0}^{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))} \int_{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))}^{\infty} \phi(\varepsilon^1, \varepsilon^2) d\varepsilon^1 d\varepsilon^2, \\
p^{10} &\equiv pr(s^i = 1, \tilde{s}^i = 0) \\
&= \int_{\bar{x} - Z^{0i}\beta^0}^{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))} \int_{\bar{y} - Z^{1i}\beta^1}^{\infty} \phi(\varepsilon^1, \varepsilon^2) d\varepsilon^1 d\varepsilon^2, \\
p^{01} &\equiv pr(s^i = 0, \tilde{s}^i = 1) \\
&= \int_{\bar{x} - Z^{0i}\beta^0}^{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))} \int_{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))}^{\infty} \phi(\varepsilon^1, \varepsilon^2) d\varepsilon^1 d\varepsilon^2, \\
p^{00} &\equiv pr(s^i = 0, \tilde{s}^i = 0) \\
&= \int_{\bar{x} - Z^{0i}\beta^0}^{\bar{y} - (Z^{1i}\beta^1 + \gamma_1 + \gamma_2(age - 18))} \int_{\bar{y} - Z^{1i}\beta^1}^{\infty} \phi(\varepsilon^1, \varepsilon^2) d\varepsilon^1 d\varepsilon^2.
\end{aligned}$$

The construction of the log-likelihood is then straight forward. Against the set of data on  $[s^i, \tilde{s}^i]$  with matched observations of explanatory variables  $[Z^{0i}, Z^{1i}]$ , we have

$$\log L[\Theta] = \sum_i I^i [s^i, \tilde{s}^i] \log(pr^{km}(\Theta))$$

wherein  $I^i$  is an indicator vector variable taking [1 1] [1 0] [01] or [0 0], depending upon the value vector of  $[s^i, \tilde{s}^i]$ , and  $pr^{km}$  is one of the corresponding probability defined above, and  $\Theta$  is the set of parameters to be estimated:

$$\Theta \equiv (\Sigma, \beta^0, \beta^1, \gamma_1, \gamma_2, \bar{y}, \bar{x})$$

### 3.2.3 Estimation results using `cmp.ado`

Luckily, there is a program that can be implemented and executed in *STATA* called `cmp.ado` that performs exactly the above maximum likelihood estimation

(and more). We used this program for the estimation. The results are shown in Table 12.

The key findings in Table 10 remain intact in this full maximum likelihood estimation: The impact of *seisyain-syusyoku* remains highly significant in all the specifications when the variable is treated as endogenous; The impact of the variable with the age also significant and negative; and, the impacts of some of the variables in the *problematic behaviors* and *friends* groups remain significant for the determination of the current employment status<sup>8</sup>.

### 3.3 Comparisons with the findings in the literature

In the analysis above, we largely confirm earlier findings in Genda and Kurosawa (2001) and Kondo (2007). The regular and full time employment immediately after school does have a persistent and quantitatively important effect on the subsequent employment of the youth.

Ours also offer additional findings. First of all, as emphasized in the recent literature such as Carneiro and Heckman (2005) and Heckman and Rubinstein (2001), we find significant impact of non-cognitive skills on the probability of regular full time employment after school. Moreover, the impact of non-cognitive skills remain for the current employment even after controlling for the outcome of the job placement immediately after school. On the other hand, our results indicate academic skills in high schools do not have such impacts on the current employment once we control for the job search outcome immediately after school. It seems possible to interpret the contrasting results in terms of information dissemination. Academic records are readily available information for all the potential employers, whereas information relevant to the non-cognitive skills are much more difficult to collect. After all, for example, whether or not a person is open minded, friendly or sociable, cannot be known from a c.v. Then it makes sense that information not readily available to the employer remains important in the subsequent employment whereas publish available information such as academic records does not<sup>9</sup>.

Our estimation results indicate the impact of the regular full time employment after school persists for a long time. Although the estimates vary somewhat across specifications and estimation methods, it is fair to say that the impact lasts at least ten years after graduation, and possibly somewhat longer, which is also the finding in Esteban-Pretel, Nakajima, and Tanaka (2009). Genda, Kondo and Ohta (forthcoming) compares the impact of the entering the job during a recession in Japan and the United States. They find that the

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<sup>8</sup>Given that the product of *age* and *seisyainsyusyoku* is also endogenous, we also ran regressions separately for 4 age groups (age<22,22-23,24-25,26-27). The estimated coefficient on *seisyainsyusyoku* declines monotonically over age groups: it is .957 for the youngest group, followed by .262, .151, and .055. Except for the last one, the coefficients are all significant at 5% confidence interval.

<sup>9</sup>See Farber and Gibbons (1996). Our findings may also reflect the large share of employment in the service and retail sector, as emphasized in Borghans ter Weel and Weinberg (2006). They argue the growing importance of non-cognitive skills (people skills) reflect the increased share of the service sector jobs.

impact persists and far more important for high school graduates than the college graduates in Japan, whereas in the United States, they find modest impact on college graduate subsequent earnings but no discernible persistent effects on high school graduates. Their findings are consistent with the view that the unique feature of the job market for high school graduates in Japan is responsible for the persistent impact of the first job. They consider the information advantage provided by school based hiring system discourages the firm from hiring those who left out in the school based system.

Our own findings, however, indicate that the school based pre-screening system may have some built-in-bias. The high school pre-screening system is very much grade based merit rating, thus the pre-screening is based primarily on academic skills. To the extent that non-cognitive skills are important, the system may well be systematically biased, which can only be adjusted by subsequent employment and turnovers.

## 4 Conclusion

In line with the earlier findings by Genda and Kurosawa (2001), we find strong effects of job placement assistance at high school on the success of the job search immediately after schools. We also confirm that the academic performance is also an important determinant in the job search during the last year of the school. Based upon our survey, however, our analysis strongly indicate that non-academic skills are equally, if not more, important. Moreover, even though the impact of academic performance is limited to the success of the job search during the school, the impact of non-academic, social skills captured in our survey questions on high school life continue and remain important even for those in the late 20's.

Whatever the underlying reasons, the success or the failure of the job search during the last year in high school remain persistent for extended period of time. Our estimate suggests that even 10 years after high school graduation, the impact is still significant in explaining the current employment status.



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**Table 1 Educational Attainment**

	Female	Male	Total	
Junior Highschool	50	35	85	3.65%
Senior High School	879	340	1,219	52.34%
Some education at Technic	56	43	99	4.25%
Technical Colleges	677	249	926	39.76%
	1662	667	2329	

**Table 2 Types of Highschool**

Tracks	Public			Private		
	Academic	Vocational	Total	Academic	Vocational	Total
College bound	50	230	280	13	135	148
Mixed	487	702	1189	117	216	333
Career	160	75	235	37	22	59
Total	697	1007	1704	167	373	540

**Table 3 GPA**

GPA (self reported)	Did not go to vocational college	Vocational college graduates and dropouts
1(lowest)	14.03	12.00
2	12.55	14.05
3	28.71	33.56
4	21.90	21.56
5 (highest)	22.81	18.83

Table 4 Favorite Subjects

Subjects	Favorite	Neutral	Hated
Japanese	41.2	39.6	19.2
Social Science	23.8	42.6	33.6
Philosophy	10.6	73.3	16.1
Mathematics	27.7	18.9	53.4
Sciences	19.7	47.1	33.2
English	20.3	39.2	40.5
Health & Sports	19.4	62.8	17.9
Fine Arts	24.2	67.1	8.7
Home Economics	22.1	72.7	5.2
Information Science	23.7	73.1	3.2

Table 5 Self evaluation of High school Life

	Female	Male	Total
3 Years in highschool was?			
Highly rewarding and enjoyable	33.33	27.59	31.69
It was ok	40.91	42.58	41.39
It was uneventful and forgettable	17.15	21.29	18.33
Glad that it is over	8.6	8.55	8.59

**Table 6 Ordered Probit Regression on Self-evaluation of High School Years**

Groups	Variables	A	B	C	D	E
		<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>
schools and curriculum	<i>zenjitsusei</i>	0.087 (0.090)	-0.086 (0.092)	-0.247 (0.095)***	-0.253 (0.095)***	-0.253 (0.100)**
	<i>koritsu</i>	-0.068 (0.056)	-0.138 (0.058)**	-0.140 (0.060)**	-0.130 (0.060)**	-0.122 (0.062)**
	<i>hutsuka</i>	-0.074 (0.055)	-0.047 (0.056)	-0.028 (0.057)	-0.026 (0.057)	-0.035 (0.059)
	<i>sinrocourse1</i>	0.093 (0.092)	0.094 (0.095)	0.072 (0.096)	0.051 (0.096)	0.064 (0.100)
	<i>sinrocourse2</i>	0.055 (0.073)	0.080 (0.075)	0.089 (0.075)	0.074 (0.075)	0.072 (0.078)
	<i>gakkohyoka1</i>	-0.023 (0.081)	-0.039 (0.082)	-0.041 (0.083)	-0.031 (0.083)	-0.006 (0.087)
	<i>gakkohyoka2</i>	0.041 (0.066)	0.041 (0.066)	0.054 (0.066)	0.063 (0.067)	0.103 (0.069)
academic performances	<i>GPA</i>	0.015 (0.021)	0.027 (0.021)	0.033 (0.021)	0.038 (0.022)*	0.040 (0.022)*
	<i>score</i>	0.072 (0.013)***	0.043 (0.013)***	0.032 (0.013)***	0.031 (0.013)***	0.039 (0.014)***
	<i>hoursstudy</i>	0.026 (0.011)**	0.022 (0.016)	0.010 (0.016)	0.008 (0.015)	0.012 (0.016)
problematic behaviors	<i>chikokukesseki</i>	-0.095 (0.026)***	-0.129 (0.027)***	-0.153 (0.028)***	-0.162 (0.028)***	-0.160 (0.029)***
	<i>ijime</i>	-0.068 (0.047)	-0.107 (0.048)**	-0.067 (0.049)	-0.058 (0.050)	-0.054 (0.052)
	<i>hutoko</i>	-0.434 (0.069)***	-0.376 (0.071)***	-0.288 (0.073)***	-0.286 (0.073)***	-0.264 (0.075)***
time allocation	<i>timespent_friends</i>		0.200 (0.024)***	0.116 (0.025)***	0.122 (0.025)***	0.114 (0.026)***
	<i>timespent_parents</i>		-0.032 (0.020)	-0.014 (0.021)	-0.011 (0.021)	-0.032 (0.021)
	<i>timespent_otheradults</i>		0.086 (0.022)***	0.064 (0.022)***	0.064 (0.022)***	0.069 (0.022)***
	<i>timespent_tv</i>		-0.025 (0.027)	-0.036 (0.027)	-0.032 (0.027)	-0.031 (0.029)
	<i>timespent_game</i>		-0.028 (0.017)	0.003 (0.018)	-0.009 (0.019)	-0.006 (0.020)
	<i>timespent_mobile</i>		0.107 (0.020)**	0.025 (0.022)	0.027 (0.023)	0.021 (0.024)
	<i>timespent_pc</i>		-0.025 (0.017)	-0.024 (0.017)	-0.031 (0.019)	-0.026 (0.020)
	<i>timespent_hobby</i>		0.014 (0.019)	0.024 (0.019)	0.025 (0.019)	0.028 (0.020)
	<i>timespent_volunteer</i>		-0.004 (0.043)	0.003 (0.044)	-0.000 (0.044)	0.011 (0.046)
	<i>timespent_bukatsu</i>		0.119 (0.016)**	0.101 (0.016)**	0.099 (0.016)**	0.101 (0.017)**
	<i>timespent_sports</i>		-0.019 (0.039)	-0.023 (0.041)	-0.036 (0.041)	-0.047 (0.043)
	<i>timespent_study</i>		-0.008 (0.022)	0.008 (0.023)	0.013 (0.023)	0.007 (0.023)
	<i>timespent_naraigoto</i>		0.006 (0.033)	-0.006 (0.034)	-0.004 (0.034)	0.004 (0.035)
	<i>timespent_arubaito</i>		0.023 (0.019)	0.014 (0.020)	0.014 (0.020)	0.020 (0.021)
<i>timespent_chores</i>		0.006 (0.020)	-0.003 (0.020)	-0.001 (0.021)	-0.012 (0.021)	
	Robust standard errors in paren					
	*** p<0.01, ** p<0.05, * p<0.1					

**Table 6 Ordered Probit Regression on Self-evaluation of High School Years  
(continued)**

Groups	Variables	A	B	C	D	E
		<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>	<i>selfeval</i>
friends	<i>friends_atHS</i>			0.632 (0.046)***	0.632 (0.046)***	0.644 (0.048)***
	<i>friends_beforeHS</i>			-0.088 (0.039)**	-0.093 (0.039)**	-0.102 (0.041)**
	<i>friends_atarubaito</i>			0.026 (0.038)	0.024 (0.038)	0.035 (0.039)
	<i>friends_atjyuku</i>			0.105 (0.066)	0.101 (0.067)	0.065 (0.069)
	<i>friendsintouch</i>			0.042 (0.010)***	0.041 (0.010)***	0.036 (0.011)***
	<i>BFGF</i>			0.249 (0.058)***	0.265 (0.059)***	0.260 (0.061)***
Personal characteristics	<i>whendidyoudoHW</i>				0.013 (0.018)	0.011 (0.019)
	<i>whendidyouplanHW</i>				0.014 (0.015)	0.013 (0.016)
	<i>risk</i>				-0.001 (0.001)	-0.001 (0.001)
	<i>boldness</i>				-0.025 (0.010)**	-0.029 (0.011)***
	<i>bmi</i>				0.004 (0.006)	0.001 (0.006)
	<i>naturalLH</i>				0.022 (0.078)	0.037 (0.078)
	<i>naturalboth</i>				-0.168 (0.152)	-0.063 (0.150)
	<i>age</i>				-0.003 (0.010)	-0.001 (0.010)
	<i>male</i>				0.074 (0.064)	0.100 (0.066)
Family background	<i>Fincomeat15</i>					0.037 (0.015)**
	<i>parentsmarriedalive</i>					0.059 (0.072)
	<i>motherdead</i>					0.092 (0.193)
	<i>fatherageat18</i>					-0.022 (0.006)***
	<i>motherageat18</i>					0.016 (0.007)**
Constant	Constant	-1.603 (0.148)***	-0.889 (0.180)***	-0.440 (0.186)**	-0.545 (0.353)	-0.735 (0.461)
	cut1	-0.731 (0.146)***	0.068 (0.179)	0.611 (0.185)***	0.511 (0.352)	0.334 (0.459)
	cut2	0.429 (0.146)***	1.328 (0.181)***	1.976 (0.188)***	1.881 (0.352)***	1.712 (0.459)***
	Observations	2244	2244	2244	2244	2126
	R-squared	0.0312	0.0856	0.138	0.1406	0.1439
	Robust standard errors					
	*** p<0.01, ** p<0.05,					

Table 7 Current Employment Status

	working				not working		
	full time, regular	full time, ad hoc	part time	temporary	Enrolled in Vocational College	housewives, etc	NEET
male	53	6.3	6.7	10.5	6.3	7.7	9.5
female	29.5	9.4	8.9	7.2	3.7	23.8	17.5
total	36.1	8.5	8.2	8.1	4.5	19.2	15.3

Table 8 The Share of surveyed individuals with regular full time jobs

Age	Gender		Seisyainsyusyoku		total
	male	female	Yes	No	
20	0.227	0.292	0.778	0.135	0.261
21	0.313	0.35	0.824	0.128	0.339
22	0.429	0.286	0.538	0.216	0.325
23	0.524	0.362	0.607	0.306	0.4
24	0.594	0.297	0.512	0.3	0.374
25	0.634	0.314	0.492	0.333	0.404
26	0.465	0.277	0.526	0.219	0.327
27	0.719	0.291	0.453	0.362	0.401
28	0.9	0.28	0.476	0.362	0.457
total	0.532	0.295	0.527	0.263	0.362

Table 9 Ordered Probit Regression on Regular Full Time Job after School

Groups	VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		seisyainusyoku								
School Characteristics (.0908)	<i>zenjitsusei</i>	0.280 (0.062)***	-0.293 (0.060)***	0.269 (0.064)***	0.317 (0.055)***	0.273 (0.059)***	0.284 (0.060)***	0.274 (0.063)***	0.287 (0.058)***	0.287 (0.058)***
	<i>koritsu</i>	0.093 (0.047)**	0.089 (0.047)*	0.084 (0.047)*	0.110 (0.046)**	0.115 (0.046)**	0.104 (0.046)**	0.102 (0.047)**	0.114 (0.045)**	0.114 (0.045)**
	<i>hutsuka</i>	-0.173 (0.041)***	-0.174 (0.041)***	-0.182 (0.041)***	-0.183 (0.041)***	-0.176 (0.040)***	-0.173 (0.041)***	-0.175 (0.041)***	-0.183 (0.040)***	-0.183 (0.040)***
	<i>sinroucourse1</i>	-0.237 (0.062)***	-0.248 (0.060)***	-0.229 (0.062)***	-0.260 (0.060)***	-0.199 (0.065)***	-0.245 (0.061)***	-0.226 (0.062)***	-0.233 (0.060)***	-0.233 (0.060)***
	<i>sinroucourse2</i>	-0.198 (0.045)***	-0.206 (0.045)***	-0.199 (0.045)***	-0.202 (0.045)***	-0.180 (0.045)***	-0.207 (0.045)***	-0.193 (0.045)***	-0.209 (0.043)***	-0.209 (0.043)***
	<i>gakkoHYOKA1</i>	0.038 (0.063)	0.040 (0.063)	0.016 (0.062)	0.035 (0.062)	0.027 (0.062)	0.023 (0.063)	0.043 (0.063)	0.038 (0.060)	0.038 (0.060)
	<i>gakkoHYOKA2</i>	-0.015 (0.045)	-0.013 (0.044)	-0.024 (0.044)	-0.021 (0.044)	-0.026 (0.043)	-0.022 (0.044)	-0.016 (0.044)	-0.005 (0.042)	-0.005 (0.042)
	<i>contime</i>	-0.001 (0.001)	-0.001 (0.001)*	-0.001 (0.001)	-0.001 (0.001)*	-0.001 (0.001)*	-0.001 (0.001)*	-0.001 (0.001)*	-0.001 (0.001)*	-0.001 (0.001)*
	<i>sinrosodo</i>	0.063 (0.014)***	0.059 (0.014)***	0.067 (0.014)***	0.066 (0.014)***	0.059 (0.014)***	0.061 (0.014)***	0.062 (0.014)***	0.059 (0.013)***	0.059 (0.013)***
	<i>sinromissed</i>	0.059 (0.030)**	0.064 (0.030)**	0.071 (0.030)**	0.068 (0.031)**	0.052 (0.030)**	0.064 (0.030)**	0.054 (0.030)**	0.057 (0.029)**	0.057 (0.029)**
Labor market (.003)	<i>kyujinkyusyokubairitu</i>	0.229 (0.079)***	0.222 (0.074)***	0.224 (0.079)***	0.218 (0.077)***	0.261 (0.077)***	0.220 (0.077)***	0.226 (0.078)***	0.224 (0.075)***	0.224 (0.075)***
	<i>prefvar</i>	0.001 (0.012)	-0.014 (0.011)	0.002 (0.012)	0.004 (0.012)	0.004 (0.012)	0.001 (0.012)	0.001 (0.012)	0.003 (0.011)	0.003 (0.011)
academic performance (.0072)	<i>GPA</i>	0.046 (0.016)***	0.061 (0.014)***	0.045 (0.016)***	0.059 (0.015)***	0.044 (0.015)***	0.046 (0.015)***	0.045 (0.015)***	0.042 (0.015)***	0.042 (0.015)***
	<i>score</i>	-0.004 (0.009)	-0.007 (0.008)	-0.003 (0.009)	-0.005 (0.009)	0.004 (0.009)	-0.003 (0.009)	-0.005 (0.008)	-0.005 (0.008)	-0.005 (0.008)
	<i>hoursstudy</i>	-0.022 (0.015)	-0.031 (0.014)**	-0.022 (0.014)	-0.024 (0.014)*	-0.017 (0.011)	-0.017 (0.014)	-0.023 (0.014)	-0.024 (0.014)*	-0.024 (0.014)*
Problematic behaviors at school (.0123)	<i>chikokakeseki</i>	-0.051 (0.020)**	-0.063 (0.019)***	-0.050 (0.020)**	-0.066 (0.019)***	-0.055 (0.020)***	-0.053 (0.020)***	-0.056 (0.020)***	-0.058 (0.019)***	-0.058 (0.019)***
	<i>ijime</i>	-0.029 (0.038)	-0.020 (0.035)	-0.021 (0.037)	-0.027 (0.037)	-0.026 (0.037)	-0.022 (0.038)	-0.035 (0.038)	-0.036 (0.036)	-0.036 (0.036)
	<i>hutoko</i>	-0.133 (0.048)***	-0.247 (0.041)***	-0.134 (0.047)***	-0.139 (0.048)***	-0.147 (0.047)***	-0.143 (0.047)***	-0.135 (0.048)***	-0.126 (0.047)***	-0.126 (0.047)***
time allocation at high school (.0291)	<i>timespent_hobby</i>	-0.039 (0.013)***	-0.027 (0.013)**	-0.042 (0.013)***	-0.037 (0.013)***	-0.046 (0.013)***	-0.041 (0.013)***	-0.039 (0.013)***	-0.034 (0.013)***	-0.034 (0.013)***
	<i>timespent_volunteer</i>	-0.069 (0.031)**	-0.049 (0.030)*	-0.067 (0.031)**	-0.064 (0.031)**	-0.075 (0.031)**	-0.072 (0.031)**	-0.065 (0.031)**	-0.070 (0.031)**	-0.070 (0.031)**
	<i>timespent_sports</i>	0.049 (0.037)	0.027 (0.033)	0.048 (0.037)	0.053 (0.037)	0.048 (0.037)	0.044 (0.037)	0.058 (0.036)	0.044 (0.034)	0.044 (0.034)
	<i>timespent_study</i>	0.013 (0.018)	0.012 (0.018)	0.013 (0.018)	-0.000 (0.014)	0.016 (0.018)	0.011 (0.018)	0.014 (0.018)	0.015 (0.018)	0.015 (0.018)
	<i>timespent_bukatsu</i>	0.049 (0.013)***	0.063 (0.012)***	0.051 (0.013)***	0.050 (0.012)***	0.053 (0.012)***	0.052 (0.012)***	0.049 (0.012)***	0.042 (0.012)***	0.042 (0.012)***
	<i>timespent_naraioto</i>	-0.063 (0.029)**	-0.047 (0.026)*	-0.066 (0.029)**	-0.064 (0.029)**	-0.052 (0.029)**	-0.057 (0.029)**	-0.066 (0.029)**	-0.063 (0.028)**	-0.063 (0.028)**
	<i>timespent_arubaito</i>	0.037 (0.015)**	0.034 (0.014)**	0.038 (0.015)**	0.035 (0.015)**	0.035 (0.015)**	0.038 (0.015)**	0.034 (0.014)**	0.038 (0.014)**	0.038 (0.014)**
	<i>timespent_chores</i>	0.031 (0.015)**	0.030 (0.014)**	0.029 (0.015)**	0.031 (0.015)**	0.025 (0.015)**	0.033 (0.015)**	0.027 (0.015)**	0.031 (0.014)**	0.031 (0.014)**
Friends (.012)	<i>friends_atHS</i>	0.054 (0.034)	0.106 (0.031)***	0.049 (0.033)	0.052 (0.034)	0.068 (0.033)**	0.078 (0.033)**	0.050 (0.033)	0.056 (0.032)*	0.056 (0.032)*
	<i>friends_beforeHS</i>	0.029 (0.029)	0.036 (0.028)	0.026 (0.029)	0.027 (0.029)	0.033 (0.029)	0.021 (0.029)	0.032 (0.029)	0.034 (0.028)	0.034 (0.028)
	<i>friends_atarubaito</i>	-0.093 (0.028)***	-0.104 (0.027)***	-0.094 (0.028)***	-0.089 (0.028)***	-0.098 (0.028)***	-0.072 (0.027)***	-0.090 (0.028)***	-0.088 (0.027)***	-0.088 (0.027)***
	<i>friends_atyuku</i>	0.075 (0.060)	0.034 (0.056)	0.075 (0.060)	0.064 (0.061)	0.089 (0.061)	0.070 (0.056)	0.059 (0.060)	0.077 (0.058)	0.077 (0.058)
	<i>friendsintouch</i>	-0.009 (0.008)	-0.010 (0.007)	-0.008 (0.007)	-0.011 (0.008)	-0.008 (0.007)	-0.011 (0.007)	-0.010 (0.007)	-0.009 (0.007)	-0.009 (0.007)
	<i>BFGF</i>	0.078 (0.042)**	0.069 (0.039)*	0.075 (0.042)**	0.073 (0.042)**	0.064 (0.042)	0.095 (0.039)**	0.073 (0.041)*	0.073 (0.040)*	0.073 (0.040)*
Personal Characteristics (.0068)	<i>hwdelay</i>	-0.055 (0.040)	-0.052 (0.038)	-0.053 (0.040)	-0.064 (0.040)	-0.071 (0.039)*	-0.055 (0.039)	-0.047 (0.040)	-0.043 (0.039)	-0.043 (0.039)
	<i>risk</i>	0.002 (0.001)*	0.001 (0.001)	0.002 (0.001)*	0.002 (0.001)*	0.002 (0.001)*	0.002 (0.001)*	0.002 (0.001)*	0.001 (0.001)	0.001 (0.001)
	<i>boldness</i>	-0.002 (0.008)	-0.006 (0.008)	-0.002 (0.008)	-0.003 (0.008)	-0.001 (0.008)	-0.005 (0.008)	-0.001 (0.008)	-0.002 (0.008)	-0.002 (0.008)
	<i>bmi</i>	-0.001 (0.004)	-0.002 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.002 (0.004)	-0.000 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)
	<i>naturalLH</i>	0.085 (0.062)	0.058 (0.058)	0.075 (0.061)	0.078 (0.061)	0.091 (0.062)	0.111 (0.058)*	0.068 (0.061)	0.061 (0.061)	0.061 (0.061)
	<i>naturalboth</i>	-0.042 (0.103)	-0.029 (0.100)	-0.035 (0.106)	-0.017 (0.108)	-0.058 (0.106)	-0.031 (0.100)	-0.028 (0.100)	-0.034 (0.099)	-0.034 (0.099)
	<i>male</i>	0.079 (0.048)*	0.069 (0.044)	0.087 (0.048)*	0.068 (0.048)	0.091 (0.047)*	0.036 (0.044)	0.069 (0.047)	0.082 (0.045)*	0.082 (0.045)*
	<i>Fincomeat15</i>	-0.015 (0.010)	-0.016 (0.009)*	-0.015 (0.009)	-0.015 (0.009)	-0.015 (0.010)	-0.016 (0.009)	-0.015 (0.009)	-0.014 (0.010)	-0.014 (0.010)
	<i>parentsmarriedalive</i>	0.039 (0.052)	0.034 (0.050)	0.046 (0.052)	0.031 (0.051)	0.061 (0.051)	0.024 (0.052)	0.041 (0.051)	0.042 (0.052)	0.042 (0.052)
	<i>motherdead</i>	-0.273 (0.113)**	-0.182 (0.106)**	-0.213 (0.111)**	-0.221 (0.111)**	-0.239 (0.107)**	-0.202 (0.107)**	-0.210 (0.119)*	-0.222 (0.113)**	-0.222 (0.113)**
<i>fatherageat18</i>	-0.002 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.002 (0.004)	
<i>motherageat18</i>	-0.012 (0.005)**	-0.013 (0.005)**	-0.012 (0.005)**	-0.013 (0.005)**	-0.012 (0.005)**	-0.012 (0.005)**	-0.012 (0.005)**	-0.013 (0.005)**	-0.013 (0.005)**	
<i>jei</i>	-0.040 (0.044)	-0.035 (0.042)	-0.036 (0.044)	-0.046 (0.043)	-0.027 (0.044)	-0.045 (0.043)	-0.038 (0.043)	-0.036 (0.043)	-0.036 (0.043)	
<i>sengyosyufu</i>	0.002 (0.042)	-0.005 (0.039)	0.004 (0.041)	0.011 (0.041)	0.002 (0.041)	-0.021 (0.040)	-0.008 (0.041)	-0.003 (0.041)	-0.003 (0.041)	
<i>fatherinactive</i>	-0.031 (0.052)	-0.028 (0.049)	-0.019 (0.052)	-0.036 (0.052)	-0.017 (0.052)	-0.039 (0.051)	-0.038 (0.052)	-0.033 (0.052)	-0.033 (0.052)	
Observations	1022	1022	1027	1022	1022	1022	1022	1022	1077	
R-Squared	0.288	0.1972	0.285	0.2808	0.2757	0.2589	0.276	0.2812	0.2704	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 10 Probit regression with Heckman Correction**

Variable Group	Variables	Base Csse	Probit with Heckman Correction		
		seisvainsvuvoku	seisvainsvuvoku	selection model	
School Characteristics	zenjitsusei	0.288 (0.060)***	0.844 (0.215)***		
	koritsu	0.095 (0.047)**	0.288 (0.125)***		
	hutsuka	-0.173 (0.041)***	-0.421 (0.115)***		
	sinrocourse1	-0.247 (0.060)***	-0.722 (0.200)***		
	sinrocourse2	-0.212 (0.044)***	-0.544 (0.124)***		
	gakkohvoka1	0.049 (0.063)	0.156 (0.162)		
	gakkohvoka2	-0.005 (0.044)	-0.005 (0.119)		
	comtime	-0.001 (0.001)	-0.004 (0.002)*		
	sinrosido	0.060 (0.014)***	0.163 (0.036)***		
	sinromissed	-0.061 (0.030)**	-0.164 (0.080)**		
	kyujinbairitsu	0.017 (0.019)	0.044 (0.049)	0.012 (0.030)	
	toshibu	-0.015 (0.045)	-0.039 (0.121)	-0.091 (0.073)	
	Academic Performance	GPA	0.046 (0.015)***	0.130 (0.041)***	-0.007 (0.023)
		hoursstudy	-0.021 (0.014)	-0.056 (0.038)	
Problematic Behaviors	chikokukeseki	-0.050 (0.020)**	-0.113 (0.054)**		
	ijime	-0.020 (0.038)	-0.014 (0.099)		
	hutoko	-0.133 (0.048)***	-0.313 (0.137)**		
Time Allocation	timespent_hobby	-0.041 (0.013)***	-0.105 (0.036)***		
	timespent_volunteer	-0.063 (0.031)**	-0.193 (0.083)**		
	timespent_sports	0.047 (0.036)	0.140 (0.092)		
	timespent_study	0.012 (0.018)	0.042 (0.049)		
	timespent_bukatsu	0.050 (0.012)***	0.115 (0.033)***		
	timespent_naraigoto	-0.067 (0.029)**	-0.162 (0.073)**		
	timespent_arubaito	0.039 (0.015)***	0.069 (0.038)*		
	timespent_chores	0.028 (0.015)*	0.102 (0.040)**		
	Friends	friends_atHS	0.053 (0.034)	0.106 (0.090)	
friends_beforeHS		0.024 (0.029)	0.093 (0.079)		
friends_atarubaito		-0.091 (0.028)***	-0.257 (0.075)***		
friends_ativuku		0.072 (0.059)	0.149 (0.147)		
friendsintouch		-0.010 (0.008)	-0.032 (0.020)		
BFGF		0.074 (0.042)*	0.199 (0.112)*		
Personal Traits		hwdelay	-0.055 (0.040)	-0.152 (0.107)	
		risk	0.002 (0.001)*	0.004 (0.002)*	
	boldness	-0.002 (0.008)	-0.003 (0.021)		
	bmi	-0.001 (0.004)	0.001 (0.011)		
	naturalLH	0.073 (0.062)	0.144 (0.160)		
	naturalboth	-0.048 (0.103)	-0.057 (0.307)		
	male	0.082 (0.048)*	0.288 (0.123)**		
	Family Backgrounds	Fincomeat15	-0.015 (0.009)	-0.020 (0.031)	-0.086 (0.016)***
parentsmarriedalive		0.067 (0.046)	0.245 (0.138)*	-0.312 (0.094)***	
motherageat18		-0.013 (0.004)***	-0.038 (0.011)***	-0.004 (0.009)	
fatherageat18				-0.003 (0.008)	
iiiei				-0.068 (0.073)	
sengyosyufu				0.036 (0.065)	
fatherinactive				0.133 (0.089)	
numsibling				0.122 (0.041)***	
Constant			0.510 (0.705)	1.010 (0.368)***	
athrho				-0.190 (0.315)	
Observations	1027	1938	1938		

Both probit model and selection equations include age dummies:  
Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table 11 Probit Regressions on the Regular Full Time Jobs**

VARIABLES		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
		<i>seisyainatt</i>																
Base specifications	seisyainusyoku2	0.706 (0.073)***	0.681 (0.079)***	0.668 (0.081)***	0.654 (0.085)***	0.644 (0.088)***	0.639 (0.090)***	0.655 (0.088)***	0.611 (0.097)***	0.513 (0.084)***	0.459 (0.092)***	0.440 (0.094)***	0.404 (0.100)***	0.388 (0.103)***	0.363 (0.105)***	0.385 (0.106)***	0.360 (0.108)***	
	seisyainusyoku*(age-18)	-0.056 (0.014)***	-0.057 (0.015)***	-0.056 (0.015)***	-0.056 (0.015)***	-0.056 (0.015)***	-0.057 (0.015)***	-0.059 (0.015)***	-0.049 (0.016)***	-0.022 (0.013)*		-0.020 (0.014)	-0.019 (0.013)	-0.018 (0.014)	-0.018 (0.014)	-0.017 (0.014)	-0.019 (0.014)	-0.013 (0.015)
	age	0.043 (0.010)***	0.048 (0.011)***	0.048 (0.011)***	0.050 (0.011)***	0.049 (0.011)***	0.051 (0.011)***	0.050 (0.011)***	0.045 (0.012)***									
	male	-0.211 (0.294)	-0.213 (0.312)	-0.207 (0.316)	-0.235 (0.305)	-0.199 (0.320)	-0.215 (0.313)	-0.223 (0.310)	-0.303 (0.281)	-0.523 (0.139)***	-0.553 (0.139)***	-0.547 (0.141)***	-0.554 (0.139)***	-0.532 (0.149)***	-0.537 (0.144)***	-0.556 (0.139)***	-0.560 (0.141)***	
	male*age	0.012 (0.015)	0.012 (0.016)	0.012 (0.016)	0.013 (0.016)	0.012 (0.016)	0.014 (0.016)	0.015 (0.016)	0.019 (0.016)	0.033 (0.014)**	0.036 (0.015)**	0.036 (0.015)**	0.036 (0.015)**	0.034 (0.016)**	0.036 (0.015)**	0.039 (0.016)**	0.040 (0.017)**	
	married	0.377 (0.104)***	0.334 (0.105)***	0.338 (0.106)***	0.330 (0.108)***	0.325 (0.110)***	0.321 (0.110)***	0.320 (0.109)***	0.289 (0.115)**	0.461 (0.122)***	0.392 (0.123)***	0.404 (0.123)***	0.409 (0.124)***	0.403 (0.127)***	0.379 (0.126)***	0.383 (0.121)***	0.333 (0.129)***	
	female*married	-0.568 (0.047)***	-0.568 (0.049)***	-0.570 (0.049)***	-0.566 (0.050)***	-0.570 (0.050)***	-0.576 (0.049)***	-0.571 (0.049)***	-0.560 (0.052)***	-0.604 (0.056)***	-0.598 (0.059)***	-0.602 (0.058)***	-0.600 (0.058)***	-0.603 (0.059)***	-0.601 (0.058)***	-0.596 (0.057)***	-0.570 (0.061)***	
	Middle school graduate	-0.224 (0.051)***									-0.188 (0.066)***							
	High School Graduates	-0.155 (0.043)***	-0.141 (0.044)***	-0.138 (0.044)***	-0.114 (0.045)**	-0.096 (0.046)**	-0.092 (0.046)**	-0.097 (0.046)**	-0.093 (0.048)*	-0.095 (0.061)	-0.100 (0.063)	-0.098 (0.063)	-0.079 (0.065)	-0.069 (0.068)	-0.069 (0.070)	-0.072 (0.068)	-0.069 (0.068)	
	Current residence	toshibu	-0.014 (0.035)	0.003 (0.036)	0.007 (0.037)	0.007 (0.037)	-0.002 (0.037)	0.003 (0.037)	0.010 (0.037)	0.025 (0.040)	0.022 (0.039)	0.028 (0.041)	0.031 (0.042)	0.034 (0.042)	0.021 (0.042)	0.024 (0.042)	0.027 (0.042)	0.032 (0.045)
School characteristics	zenjitsusei		0.097 (0.055)*	0.105 (0.055)*	0.058 (0.062)	0.060 (0.062)	0.053 (0.062)	0.045 (0.063)	0.035 (0.065)		0.141 (0.056)**	0.151 (0.056)**	0.110 (0.063)*	0.111 (0.063)*	0.096 (0.065)	0.091 (0.065)	0.072 (0.068)	
	koritsu		0.035 (0.043)	0.033 (0.044)	0.019 (0.044)	0.005 (0.046)	0.013 (0.046)	0.013 (0.046)	0.030 (0.047)		-0.009 (0.050)	-0.013 (0.051)	-0.030 (0.053)	-0.049 (0.054)	-0.037 (0.054)	-0.037 (0.055)	-0.009 (0.056)	
	hutsuka		-0.10 (0.042)	-0.008 (0.043)	0.007 (0.043)	0.000 (0.044)	-0.003 (0.044)	0.000 (0.043)	-0.001 (0.045)		-0.031 (0.048)	-0.029 (0.048)	-0.007 (0.049)	-0.012 (0.050)	-0.014 (0.051)	-0.014 (0.051)	-0.011 (0.050)	
	sinrocourse1		0.055 (0.069)	0.046 (0.069)	0.075 (0.071)	0.052 (0.072)	0.024 (0.073)	0.016 (0.072)	0.030 (0.075)		0.012 (0.079)	-0.003 (0.078)	0.030 (0.081)	0.006 (0.081)	-0.028 (0.081)	-0.027 (0.081)	-0.015 (0.084)	
	sinrocourse2		0.019 (0.046)	0.016 (0.046)	0.023 (0.046)	0.022 (0.047)	0.008 (0.048)	0.002 (0.048)	0.026 (0.050)		0.008 (0.049)	0.006 (0.049)	0.012 (0.049)	0.013 (0.050)	-0.003 (0.050)	-0.008 (0.051)	-0.008 (0.052)	
	gakkohyoka1		-0.052 (0.057)	-0.046 (0.058)	-0.061 (0.058)	-0.044 (0.060)	-0.038 (0.060)	-0.043 (0.060)	-0.062 (0.062)		-0.041 (0.064)	-0.035 (0.065)	-0.041 (0.066)	-0.036 (0.067)	-0.025 (0.068)	-0.031 (0.068)	-0.031 (0.068)	
	gakkohyoka=academic career track mixed		-0.055 (0.045)	-0.053 (0.045)	-0.053 (0.046)	-0.045 (0.046)	-0.042 (0.047)	-0.049 (0.047)	-0.061 (0.048)		-0.095 (0.048)**	-0.093 (0.048)*	-0.090 (0.049)*	-0.086 (0.049)*	-0.075 (0.051)	-0.079 (0.050)	-0.097 (0.052)*	
	comtime		-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)		-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	
	sinrosido		0.014 (0.013)	0.010 (0.013)	0.010 (0.013)	0.010 (0.014)	0.006 (0.014)	0.005 (0.014)	0.002 (0.015)		0.002 (0.014)	-0.002 (0.014)	-0.002 (0.014)	-0.002 (0.015)	-0.005 (0.015)	-0.008 (0.015)	-0.010 (0.016)	
	sinromissed		-0.044 (0.029)	-0.039 (0.030)	-0.047 (0.030)	-0.043 (0.030)	-0.033 (0.030)	-0.037 (0.030)	-0.016 (0.031)		-0.050 (0.034)	-0.045 (0.034)	-0.048 (0.034)	-0.045 (0.034)	-0.037 (0.035)	-0.042 (0.034)	-0.014 (0.036)	
academic performance	GPA			0.024 (0.014)*	0.015 (0.015)	0.022 (0.015)	0.022 (0.016)	0.023 (0.016)	0.025		0.027 (0.015)*	0.011 (0.017)	0.021 (0.017)	0.024 (0.017)	0.026 (0.017)	0.023 (0.017)		
	hoursstudy			0.003 (0.009)	0.002 (0.009)	0.009 (0.013)	0.006 (0.013)	0.008 (0.013)	0.012 (0.013)		0.005 (0.010)	0.001 (0.010)	0.011 (0.014)	0.009 (0.014)	0.012 (0.014)	0.019 (0.014)		
problematic behaviors at highschool	chikokukesseki				-0.039 (0.019)**	-0.046 (0.020)**	-0.056 (0.020)**	-0.059 (0.020)**	-0.052 (0.021)**				-0.065 (0.022)**	-0.068 (0.022)**	-0.071 (0.023)**	-0.077 (0.023)**	-0.070 (0.024)**	
	ijime				-0.080 (0.036)**	-0.070 (0.036)*	-0.059 (0.037)	-0.058 (0.037)	-0.058 (0.038)				-0.056 (0.040)	-0.041 (0.041)	-0.039 (0.041)	-0.033 (0.041)	-0.027 (0.042)	
	hutoko				-0.116 (0.046)**	-0.103 (0.047)**	-0.079 (0.049)	-0.076 (0.049)	-0.080 (0.051)				-0.108 (0.050)**	-0.096 (0.052)*	-0.077 (0.054)	-0.066 (0.054)	-0.071 (0.056)	



Table 12 Maximum Likelihood Estimation of Recursive Probit Model

	VARIABLES	EQ1		EQ2		EQ3		EQ4		EQ5		EQ6		EQ7		
		seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	seisyainatt	seisyainusyoku	
Base specification for seisyainatt	seisyainusyoku	2.615 (0.405)***		2.546 (0.419)***		2.160 (0.481)***		1.952 (0.511)***		1.697 (0.534)***		1.726 (0.540)***		1.805 (0.588)***		
	seiage	-0.140 (0.050)***		-0.138 (0.051)***		-0.140 (0.054)***		-0.137 (0.055)***		-0.127 (0.057)***		-0.130 (0.057)***		-0.127 (0.059)***		
	age	0.076 (0.039)**		0.077 (0.039)**		0.078 (0.042)**		0.073 (0.044)**		0.073 (0.045)		0.073 (0.045)		0.078 (0.047)		
	maleage	0.045 (0.054)		0.044 (0.054)		0.042 (0.058)		0.049 (0.059)		0.053 (0.061)		0.057 (0.061)		0.059 (0.064)		
	married	1.084 (0.319)***		1.114 (0.323)***		1.226 (0.343)***		1.249 (0.354)***		1.175 (0.365)***		1.194 (0.368)***		1.101 (0.378)***		
	femalemarried	-2.389 (0.353)***		-2.431 (0.358)***		-2.597 (0.373)***		-2.661 (0.383)***		-2.656 (0.391)***		-2.647 (0.394)***		-2.550 (0.407)***		
	SCHD1	-0.273 (0.284)		-0.250 (0.286)		-0.111 (0.301)		-0.407 (0.342)		-0.323 (0.362)		-0.368 (0.365)		-0.452 (0.419)		
	SCHD2	-0.167 (0.151)		-0.166 (0.153)		-0.166 (0.160)		-0.136 (0.166)		-0.139 (0.168)		-0.154 (0.170)		-0.136 (0.175)		
	toshibu	0.118 (0.108)	-0.044 (0.116)	0.119 (0.109)	-0.045 (0.116)	0.125 (0.114)	-0.051 (0.117)	0.088 (0.117)	-0.052 (0.118)	0.082 (0.119)	-0.054 (0.118)	0.094 (0.120)	-0.054 (0.118)	0.148 (0.125)	-0.054 (0.118)	
	zenjitsusei		0.791 (0.202)***		0.796 (0.203)***		0.805 (0.208)***		0.801 (0.209)***		0.793 (0.209)***		0.793 (0.209)***		0.797 (0.209)***	
	koritsu		0.228 (0.123)**		0.232 (0.123)**		0.261 (0.126)**		0.271 (0.126)**		0.276 (0.126)**		0.277 (0.126)**		0.274 (0.126)**	
	hutsuka		-0.452 (0.109)***		-0.455 (0.109)***		-0.468 (0.111)***		-0.470 (0.112)***		-0.468 (0.112)***		-0.468 (0.112)***		-0.469 (0.111)***	
	sinrocourse1		-0.561 (0.194)***		-0.569 (0.195)***		-0.604 (0.199)***		-0.615 (0.199)***		-0.620 (0.199)***		-0.620 (0.199)***		-0.620 (0.199)***	
	sinrocourse2		-0.448 (0.118)***		-0.455 (0.119)***		-0.492 (0.120)***		-0.502 (0.120)***		-0.509 (0.120)***		-0.509 (0.120)***		-0.507 (0.120)***	
	gakkohyoka1		0.085 (0.157)		0.090 (0.158)		0.120 (0.161)		0.130 (0.161)		0.136 (0.161)		0.136 (0.161)		0.133 (0.161)	
gakkohyoka2		-0.097 (0.115)		-0.092 (0.115)		-0.053 (0.118)		-0.038 (0.119)		-0.024 (0.119)		-0.024 (0.119)		-0.031 (0.120)		
comtime		-0.004 (0.002)*		-0.004 (0.002)*		-0.003 (0.002)*		-0.003 (0.002)		-0.003 (0.002)		-0.003 (0.002)		-0.003 (0.002)		
sinrosido		0.127 (0.036)***		0.129 (0.036)***		0.139 (0.036)***		0.141 (0.037)***		0.143 (0.037)***		0.143 (0.037)***		0.142 (0.037)***		
sinromissed		-0.118 (0.077)		-0.119 (0.077)		-0.122 (0.079)		-0.119 (0.079)		-0.118 (0.079)		-0.118 (0.079)		-0.119 (0.079)		
kyujinbairitsu		0.075 (0.049)		0.075 (0.049)		0.071 (0.050)		0.069 (0.050)		0.067 (0.051)		0.067 (0.051)		0.068 (0.051)		
Academic performance	GPA	0.112 (0.039)***	0.041 (0.043)	0.105 (0.039)***	0.021 (0.046)	0.109 (0.040)***	0.048 (0.048)	0.107 (0.040)***	0.060 (0.049)	0.107 (0.040)***	0.064 (0.049)	0.107 (0.040)***	0.065 (0.052)	0.107 (0.040)***		
	hoursstudy	-0.037 (0.035)	-0.002 (0.027)	-0.038 (0.036)	-0.014 (0.029)	-0.045 (0.037)	0.005 (0.040)	-0.048 (0.037)	-0.007 (0.041)	-0.050 (0.037)	-0.002 (0.041)	-0.050 (0.037)	0.010 (0.043)	-0.049 (0.037)		
Problematic behaviors	chikokukesseki	-0.150 (0.052)***		-0.148 (0.062)***		-0.122 (0.053)***		-0.121 (0.064)***		-0.217 (0.065)***		-0.236 (0.067)***		-0.216 (0.053)***		
	ijime	-0.016 (0.095)		-0.014 (0.111)		-0.010 (0.098)		-0.010 (0.115)		-0.114 (0.099)		0.008 (0.117)		0.008 (0.099)		
Time Allocation	hutoke	-0.366 (0.130)***		-0.366 (0.130)***		-0.342 (0.135)***		-0.340 (0.135)***		-0.352 (0.158)***		-0.360 (0.135)***		-0.357 (0.135)***		
	timespent_hobby	-0.113 (0.034)***		-0.113 (0.034)***		-0.111 (0.035)***		-0.106 (0.041)**		-0.086 (0.041)**		-0.106 (0.035)***		-0.106 (0.044)**		
	timespent_volunteer	-0.135 (0.079)**		-0.136 (0.080)**		-0.131 (0.082)		-0.126 (0.092)		-0.126 (0.095)		-0.124 (0.096)		-0.125 (0.082)		
	timespent_sports	0.086 (0.087)		0.087 (0.088)		0.096 (0.090)		0.024 (0.099)		0.097 (0.103)		0.100 (0.090)		0.100 (0.106)		
	timespent_study	0.030 (0.047)		0.032 (0.047)		0.037 (0.048)		-0.057 (0.055)		0.041 (0.057)		0.040 (0.049)		-0.031 (0.060)		
	timespent_bukatsu	0.129 (0.032)***		0.129 (0.032)***		0.128 (0.039)**		0.071 (0.039)**		0.124 (0.039)		0.124 (0.033)***		0.068 (0.044)		
	timespent_naraigoto	-0.134 (0.073)**		-0.137 (0.074)**		-0.164 (0.075)**		0.134 (0.083)**		-0.180 (0.074)**		-0.182 (0.084)**		-0.182 (0.085)**		
	timespent_arubaito	0.104 (0.037)***		0.104 (0.037)***		0.100 (0.038)***		0.088 (0.040)**		0.094 (0.046)**		0.085 (0.038)**		0.085 (0.047)**		
	timespent_chores	0.066 (0.037)*		0.067 (0.037)*		0.074 (0.038)**		-0.051 (0.045)		0.079 (0.046)		-0.053 (0.038)**		0.079 (0.038)**		
	friends_athS	0.139 (0.086)		0.139 (0.086)		0.132 (0.089)		0.124 (0.089)		0.128 (0.105)		0.124 (0.089)		0.124 (0.112)		
	friends_beforeHS	0.084 (0.077)		0.083 (0.077)		0.084 (0.079)		0.084 (0.079)		-0.020 (0.092)		0.085 (0.084)		0.083 (0.097)		
	friends_atarubaito	-0.251 (0.072)***		-0.250 (0.072)***		-0.237 (0.074)**		-0.237 (0.074)**		-0.231 (0.064)***		-0.194 (0.095)**		-0.184 (0.099)**		
	friends_atiyuku	0.200 (0.143)		0.199 (0.144)		0.181 (0.147)		0.176 (0.148)		0.259 (0.188)		0.266 (0.189)		0.168 (0.191)		
	friendsintouch	-0.022 (0.019)		-0.022 (0.019)		-0.024 (0.019)		-0.025 (0.019)		-0.025 (0.023)		-0.026 (0.019)		-0.026 (0.024)		
	BFGF	0.195 (0.106)*		0.195 (0.107)*		0.188 (0.109)**		0.183 (0.110)**		0.245 (0.132)**		0.176 (0.110)		0.204 (0.110)		
Personal Traits	hwdelay	-0.098 (0.104)		-0.098 (0.105)		-0.132 (0.106)		-0.132 (0.106)		-0.149 (0.106)		-0.150 (0.106)		-0.149 (0.133)		
	risk	0.004 (0.002)*		0.004 (0.002)*		0.004 (0.002)		0.004 (0.002)		0.004 (0.002)		0.004 (0.002)		0.004 (0.002)		
	boldness	-0.011 (0.020)		-0.011 (0.020)		-0.008 (0.021)		-0.007 (0.021)		-0.007 (0.021)		-0.006 (0.021)		-0.006 (0.025)		
	bmi	-0.001 (0.011)		-0.001 (0.011)		-0.000 (0.011)		-0.000 (0.011)		-0.000 (0.011)		-0.020 (0.011)		-0.013 (0.011)		
	naturalLH	0.085 (0.155)		0.087 (0.156)		0.101 (0.160)		0.106 (0.160)		0.106 (0.160)		0.113 (0.161)		0.112 (0.160)		
	naturalboth	-0.133 (0.288)		-0.129 (0.289)		-0.112 (0.295)		-0.112 (0.295)		-0.108 (0.293)		-0.105 (0.293)		-0.106 (0.358)		
	male	-1.000 (1.323)		-0.969 (1.334)		-0.965 (1.414)		0.234 (1.452)		-1.094 (1.487)		0.224 (1.495)		-1.189 (1.559)		
	Fincomeat15	-0.027 (0.024)		-0.028 (0.024)		-0.031 (0.025)		-0.031 (0.025)		-0.033 (0.025)		-0.034 (0.025)		-0.034 (0.025)		
	parentsmarriedalive	0.145 (0.117)		0.145 (0.117)		0.150 (0.120)		0.150 (0.120)		0.153 (0.120)		0.153 (0.120)		0.153 (0.153)		
	mothereageat18	-0.031 (0.010)***		-0.031 (0.010)***		-0.034 (0.010)***		-0.034 (0.010)***		-0.034 (0.010)***		-0.034 (0.010)***		-0.034 (0.010)***		
atanhrho_12	-0.637 (0.175)***		-0.588 (0.178)***		-0.250 (0.175)		-0.127 (0.181)		-0.014 (0.183)		-0.010 (0.187)		-0.070 (0.231)			
rho_12																
Constant	-2.551 (0.973)***	0.348 (0.658)	-2.700 (0.997)***	0.382 (0.662)	-2.098 (1.075)**	0.395 (0.677)	-1.965 (1.134)**	0.420 (0.680)	-2.221 (1.165)**	0.446 (0.680)	-1.684 (1.258)	0.446 (0.681)	-2.592 (1.527)**	0.448 (0.680)		
Observations	1057	1057	1057	1057	1057	1057	1057	1057	1057	1057	1057	1057	1011	1011		

R-squared  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Standard errors in parentheses

Figure 1 Box Plot of Predicted Probability  
Across GPA(=1 low to =5 high)

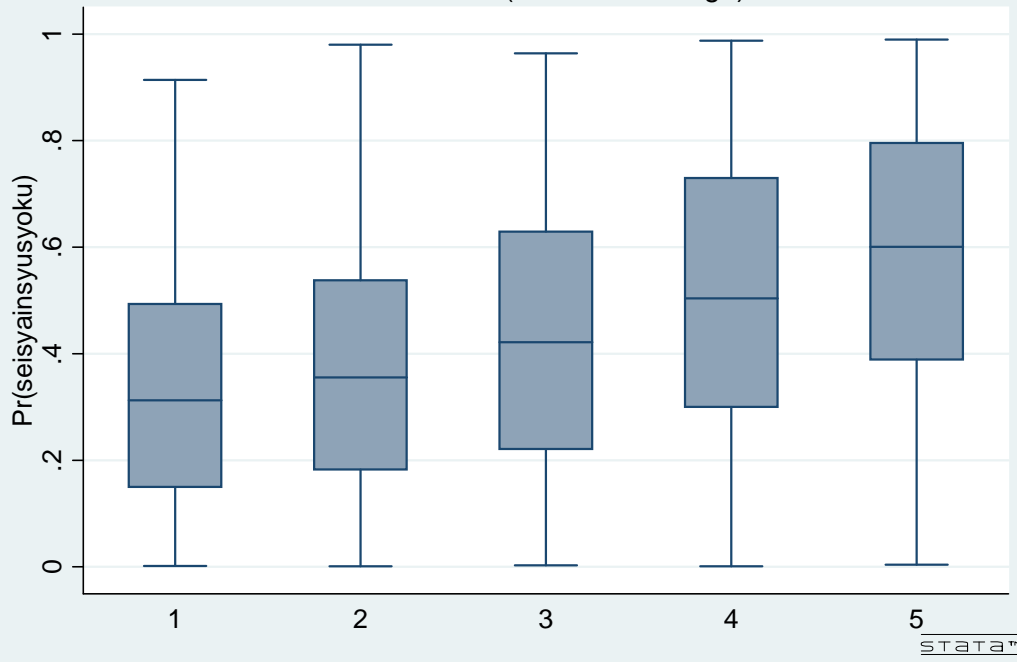
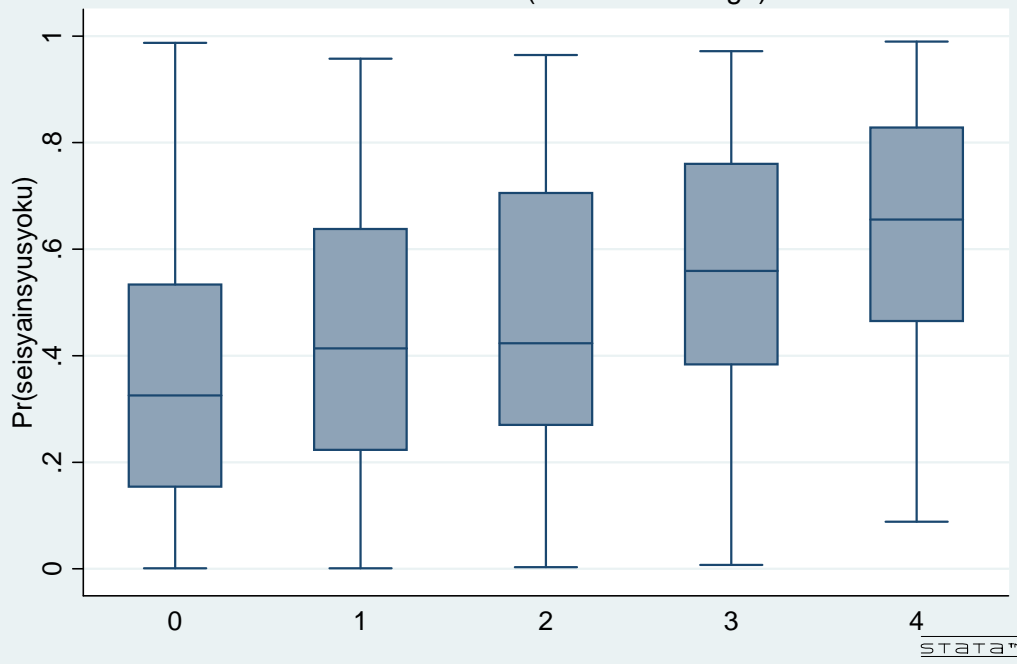


Figure 2 Box Plot of Predicted Probability  
Across Bukatsu(=0 low to =4 high)



STATA™

Figure 3 Box Plot of Predicted Probability  
Across Sinrosido(=0 low to =6 high)

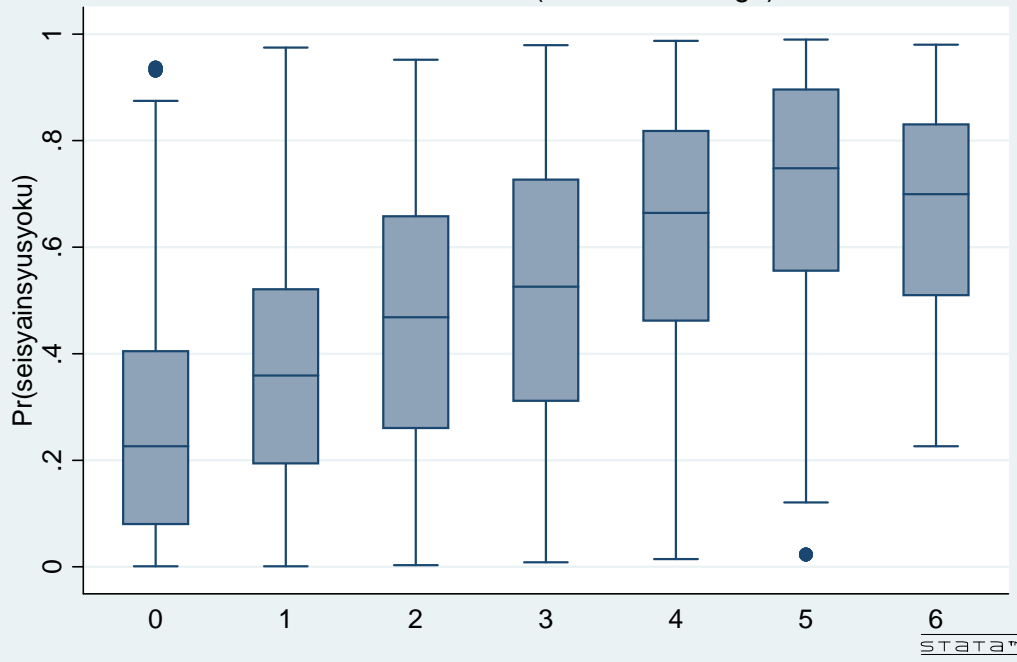


Figure 4 Box Plot of Predicted Probability  
Across Seisyain-syusyoku and age

