How do students make educational choices ? The influence of gender stereotypes about abilities.

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Abstract

In almost all developed countries, girls and boys have an equal access to education and seem free to choose their educational field. However, girls choose more often fields leading to low-paid jobs and less prestigious careers, while they perform as well as boys at school. An economic analysis of these gendered choices focused on abilities and attainments is suggested in this paper. We develop a model of educational choices, in which a stereotype specifies that the anticipated cost of choosing a scientist or literary track, depending on the skill in each subject, is not the same for boys and girls. Particularly, we expect that boys (girls) overestimate the marginal cost of the skill in humanities (sciences) and vice-versa. Next, considering grades as a proxy for abilities, we investigate in the French context whether grades influence differently girls' and boys' choices, using a panel of French pupils (1995-2011). We estimate both Baccalauréat field choices and higher-education choices. Results show that the stereotype does not impact subject choices (Sciences versus Humanities), but affects more the choice of the type of track. At secondary school, girls who perform better in Math but with an average global level choose more often a general Economic or Literary Bac rather than a technical Bac, while the choice of a scientist-oriented technical Bac would allow to value at best their abilities in Math. Regarding higher-education, girls are less sentitive than boys to their grades in science to choose a Preparatory Class (the most prestigious field), but they are more sensitive than boys to their grades in humanities.

Keywords: Educational choices, Gender stereotypes

JEL classification: I2, J16, J24

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1. Introduction

Almost everywhere in developed countries, girls and boys have an equal access to education and seem free to choose their educational field. Nevertheless, educational choices are highly gendered, and partly remain a mystery for an economist. According to the human capital theory, students should make educational decisions in order to obtain the highest future income (Becker, 1964; Mincer, 1974; Ben-Porath, 1967). However, girls choose more often fields leading to low-paid jobs and less prestigious careers, even though they perform as well as boys at school. Indeed, girls are more likely to choose Humanities, Language, Education and Arts subjects, while Engineering and Science remain masculine choices. For example, in France, pupils have to choose a *Baccalauréat* field around the age of sixteen. In 2011, according to DEPP-RERS[1], girls represent 44,9% of pupils in the scientist Bac (*Bac S*), 70,1% in the literary Bac (*Bac L*), and 61,2% in the economist Bac (*Bac ES*). After having passed the *Baccalauréat*, gendered pattern appears more pronounced. Concerning the preparatory courses to enter *Grandes Ecoles* (*CPGE*, the most selective field after Bac), girls represent 29,5% of students in scientific courses, 54,2% in economics courses, and 74,2% in literary courses. At university, girls represent 28,2% of students in a scientist major, 73,33% in humanities and language majors. However, girls succeed as well as boys: in 2009, 87% of girls and 85% of boys have passed the *Baccaulérat* (for all types of Bac), and 17% of girls and 16% of boys have passed the *Baccalauréat* with honours or first class honours. In addition, expected schooling is 18,7 years for girls and 18,2 years for boys.

This gendered graduate education strongly affects future incomes. "Masculine" subjects lead to better paid jobs than "feminine" subjects: in 2009, median wage after having attended an engineer school is 2480 euros, and 2000 euros after a physics or mathematics specialisation at university, while the median wage is 1480 euros after a sociology or psychology field, and 1600 euros after a literary or philosophy field (*INSEE*). Thus gendered specialization during adolescence strongly interacts with women's situation in the labor market and has several negative implications for women: it results in differences in earned wages, and it seems to highly explain occupation choices. "Feminine" fields lead more to part time jobs, which make them more exposed to a risk of poverty, especially in case of divorce. Beyond economic consequences, this, in turn, could have a strong impact on roles and representations of women, and on demographic

[1]DEPP: Direction de l'évaluation, de la prospective et de la performance (French Ministry of Education), RERS: Repères et références statistiques sur les enseignements, la formation et la recherche

characteristics of the society.

Education economists study individual educational choices as an investment, bringing best wages for future, under the opportunity cost of the time spent at school. Gary Becker conceptualized this framework as the Human Capital Theory (1964), providing an economic theory of "education demand" and tools to understand how educational choices are influenced by costs and benefits. Becker (1964), and later Mincer (1974) describe educational levels as a function of expected returns, themselves fonctions of future wages, initial wealth, inequalities of abilities. These pioneer analyses have been enriched to take into account some bias: cognitive or behavioral differences linked to social or familial environment (Bowles and al. 2001), uncertain perspectives (Keane and Wolpin, 1997, Eckstein and Wolpin, 1999). But human capital models do not achieve to explain gendered choices, since, in most of developed countries, men and women obtain similar amounts of education.

More recently, educational choices have been studied throughout structural dynamic models of return to education (Cameron and Heckman, 1998, Eckstein and Wolpin, 1999, Keane and Wolpin, 1997 and 2001, Magnac and Thesmar, 2002, Arcidiacono, 2004, Lee, 2005, Beffy, Fougère and Maurel, 2012, Brodaty, Gary-Bobo and Prieto, 2011, and Belzil 2007 for a review of these models). Among them, Arcidiacono (2004) develops a dynamic model of college and major choice, and shows that differences in monetary return explain little of the ability sorting across majors. Beffy, Fougère and Maurel (2012) find a very low elasticity of major choice to expected earnings in France, and suggest that non pecuniary factors are a key determinant of schooling choices.

In this paper, our general objective is to understand why boys and girls make different educational choices, and particularly why girls make detrimential educational decisions. If the reason is not only a matter of tastes, then, for the sake of both the reduction of the gender wage gap and the efficient allocation of human resources, it is important to know why boys and girls make traditional educational choices. Such an analysis can have important policy implications.
In order to explain this phenomenon, an analysis focused on abilities and attainments in different subjects is suggested. Particularly, we investigate if boys and girls believe their abilities in Science and Humanities will be valued differently on the labour market. In other words, we study if boys and girls overestimate or underestimate their abilities in different subjects, leading them

to different educational choices. We first develop a model of educational choices, in which the objective of the pupil is to maximize the expected income, minus the cost of education, depending on skills in specific subjects. All things being equal and independently of sexe, pupils more able in a subject should choose an occupation which allows to value at best this talent. Our starting point is that young pupils have imperfect information about the cost of being in each track. Our main assumption is that there exists a stereotype in the society, which specifies that the anticipated cost is not the same for boys and girls. We expect that boys (girls) overestimate the marginal cost of the skill in humanities (sciences) and vice-versa. Then, considering grades in Science and Humanities as a proxy for abilities, we investigate in the french context if grades in Science and Humanities impact differently boys and girls educational choices, in secondary education and higher education. We use a multinomial logit model to estimate *Baccalauréat* choices, then post-Bac choices conditional to the Bac field chosen before. In this framework, we investigate the presence of the stereotype, from when it begins to affect student choices (before Bac choice, or after), and which of girls and boys suffer more from beliefs.

The influence of grades on educational track choices is not new in the literature. Jonsson (1999), Van de Werfhorst, Sullivan, Cheung (2003) and very recently Favara (2012), have studied precisely the gendered pattern of educational choices, by focusing on the impact of grades on major choices, in Sweeden for the first paper, and in Great Britain for the other two. Van de Werfhorst, Sullivan, Cheung (2003) analyse the impact of family background and ability on the choice of subjects in secondary and tertiary education. Both absolute and relative levels of ability are relevant to the choice of subjects at degree level, but does not explain the gender segregation across disciplines. Favara (2011) shows that gender stereotyping affects educational choices from the age of 14 and this effect is larger for girls than for boys. In addition, attending a sixth-form-single-sex school leads students to less stereotyped educational choices. Jonsson (1999) investigates the comparative advantage theory to explain choices in Sweden. Empirical tests support this theory. Comparative advantages create sex segregation in education, and subsequently in the labour market. However, it is unable to explain a major mart of the sex differences in educational choices. While sex inequalities are relatively small in Scandinavia, but segregation subtantial, this gives very scant support for parental role-model explanation of sex segregation.

Such an analysis has never been led before in France. In addition, we extend previous studies

on several points. First, Jonsson (1999) studies educational decisions considering one choice (secondary education), and Van de Werfhorst and al. (2003) and Favara (2012) focus on two decisions, but separately. We also consider two educational decisions (Bac and higher education choices), but besides these papers, we develop a complete model in which choices are related: higher educational choices are studied conditional to Bac choices.In addition, because choices are interrelated, our model fits well the french educational sytem in which a choice of Bac track partly conditions possible post-Bac alternatives.
In addition, previous works focus on subject choices. In our paper, we investigate not only subjects, but also type of curriculum: General or Technical Bac; University, technical studies or preparatory classes for higher educational choices. This allows to analyse both sex segregation by subjects and by type of studies (some of them are more selective, other more technical...).
The third difference is that we do not only explore the influence of attainments, but also the way girls and boys perceive their grades. In addition to school grade variables, we include some interaction variables of sex and grades, and we control by variables of preferences, in order to capture as much as possible the effect of the perceived ability.

We use the French pupils panel (*Panel d'élèves du second degré, recrutement 1995-2011, DEPP*), lead by DEPP[2]. This is a large sample size panel (17830 observations), with a longitudinal setting. Pupils are interviewed since they enter college, until they end their studies. Very precise information about the pupil, his family, his school choices are collected throughout years. Our final sample contains 9365 pupils making a Bac choice, and 4407 pupils making a higher educational choice.

In the next section of the paper, we present a review of the literature about sex differences as determinants of educational sex segregation, considering contributions of the economic literature, but also of sociology and psychology, in order to set our assumption among other factors. Section 3 presents the french educational system and the data we use. Section 4 develops the model of educational choices. We lead the empirical work in next sections. In section 5 are reported results about Baccalauréat choices, and section 6 reports and discuss results about higher-educational decisions. Section 7 concludes.

[2]DEPP: Direction de l'évaluation, de la prospective et de la performance. French Ministry of Education

2. Why sex segregation at school ? A literature review

Initially, it is hard to imagine any money-related motive that would lead women to choose "female" occupations, since they pay less (England and Folbre, 2005). Nevertheless, human capital theorists have tried to explain why men and women getting the same amount of education would choose different fields (England and Folbre, 2005). Polachek (1981, 1984) argue that educational sex segregation could come from different life plans of men and women. Since women anticipate children and family responsibilities, and some future maternity leaves, they may have different life plans than men. Therefore they may choose fields leading to jobs with a low depreciation of the capital during years away from the job, in order to minimize the monetary loss of the leave. This thesis brings educational choices back to efficiency. It is verified using broad occupational categories (Polachek), but not using more detailed categories (England 1982, 1984).
Another explanation could be that women may anticipate that employers engage in discrimination in hiring or placement, and treat similarly qualified men and women in a different way, or that employers use criteria for selection that have an unintended but disparate impact by sex (Reskin and Roos 1990; Reskin 1998). This could lead girls to make different educational choices.

As mentioned in introduction, traditional observable variables used by economists (expected wage, abilities, family background) do not completely drive educational choices. But what do other disciplines (sociologists, psychologists, etc.) say about the issue ?

One could say that boys ang girls have different preferences and interests, leading them to follow different curriculum at school. However, sociologists argue that these preferences could be socially and culturally built, from childhood. Huston (1983) shows that by age five, children have clearly defined gender roles regarding appropriate behaviour and traits. Furthermore, Eccles and Hoffman (1984) and Huston (1983) show that children appear to monitor their behaviors and aspirations in terms of these norms. Thus gender roles likely influence educational and vocational choices.
Akerlof and Kranton (2000) introduce the concept of gender identity in an economic framework, and emphasize impacts on individual behaviour. They develop an utility function in which identity is associated with different social categories and ways in which people in these categories are expected to behave. Individuals suffer an utility loss if their action does not correspond to gender prescription for behavior. So people in occupations associated with the opposite sex often have ambiguous feelings about their work because they violate their own

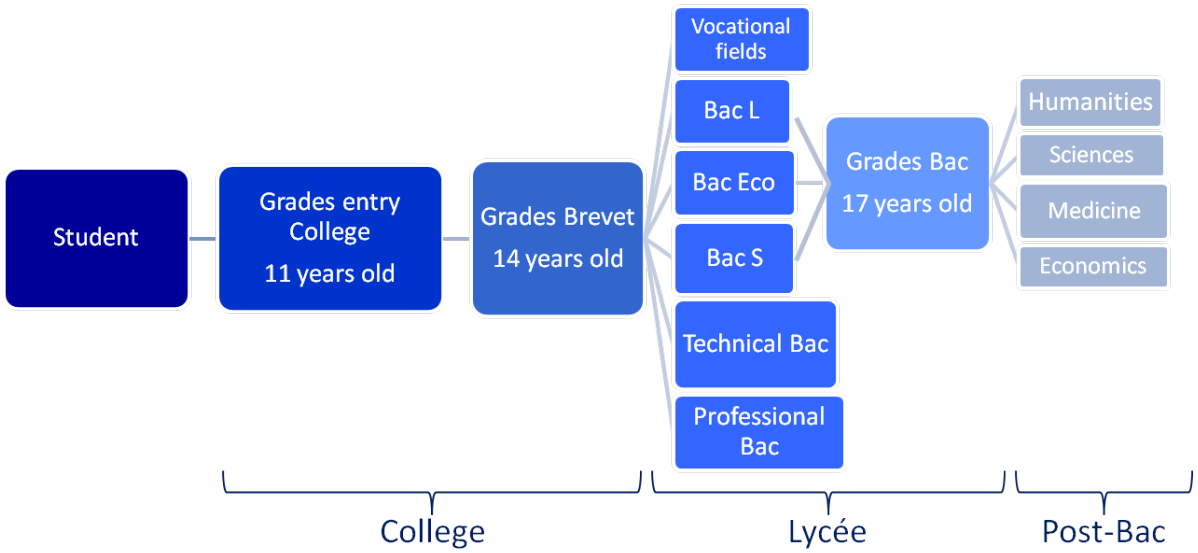
identity or that of their coworkers (Janssen and Backes-Gellner, 2011). A similar argument could be provided for educational choices. This concept can be qualified of gender identity or social norm.

Actually, the approach we adopt in this paper is quite different, and fits more the framework of the "stereotype threat" literature. Indeed, rather than conformity behaviour, psychologists argue that educational choices could be highly shaped by beliefs or stereotypes. Stereotypes are judgments about abilities or attributes of individuals based on their membership in a social group (Ruble, Cohen, and Ruble, 2001). For instance, people could think that on average, girls are less able than men in mathematics or physics, and these beliefs become self-fulfilled. This mechanism has been emphasized by Steele and Aronson (1995), under the *Stereotype Threat* concept. In their pioneer work, they show that Black college students performed more poorly on standardized tests than White students when their origin was emphasized. When origin was not emphasized, however, Black students performed better and equivalently with White students. Then many experiments have been led, and stereotype threat has been shown to reduce the performance of individuals who belong to negatively stereotyped groups. Among them, many experiments focus on student abilities. Stereotype threat has been shown to harm the academic performance of females in math (Good, Aronson, & Harder, 2008; Inzlicht & Ben-Zeev, 2000; Spencer, Steele, & Quinn, 1999). Consistent exposure to stereotype threat about ability of women in math can reduce the degree that individuals value the domain in question (Aronson, et al. 2002; Osborne, 1995; Steele, 1997). It can lead students to choose not to pursue the domain of study and, consequently, limit the range of professions that they can pursue. Therefore, the long-term effects of stereotype threat might contribute to educational and social inequality (Good et al., 2008a; Schmader, Johns, & Barquissau, 2004). Our educational model of educational choice corresponds to this framework.

3. The Data

3.1. The French educational system

Pupils enter College around the age of 11 years old, and College lasts four years. At the entry of College, pupils take a national evaluation in french and mathematics. From 11 to 15 year old, pupils attend an only curriculum at College, rewarded by the "*Brevet des Collèges*", the first



exam.

Then they can opt for the Lycée to prepare Bac exam, or vocational studies (short studies in two years: BEP or CAP). Choosing the first alternative, the Lycée to prepare Bac exam, the first year remains general. After this first year, pupils have to make their first fundamental decision: the choice of a *Baccalauréat* (BAC) field (around the age of sixteen). They can decide to enroll a General Bac, a Technical Bac or a Professional (vocational) Bac. In each type of Bac, they choose a speciality (a summary of different Bac fields is displayed in Appendix 2). There are three main majors among the general Bac: the scientist Bac (Bac S), economics Bac (Bac ES), and literary Bac (Bac L). In each of these majors, pupils choose some options, but we do not study them in this study. Regarding the technical Bac, there are four main majors: engineer (Bac STI), tertiary (Bac STT), laboratory (Bac STL) and Health and Social (Bac SMS). Pupils opting for a professional Bac have the choice among a large set of specilities, that we gather into two main majors: production and services.

The choice of a Bac field is crucial for future, especially for the Technical or Professional Bac, given that the range of possible after-Bac tracks is almost entirely determined by the major chosen. Indeed, teaching is very specialised in Technical and Professional Bac, while this is less the case concerning General Bac fields. For example, pupils in the Scientist Bac study mathematics and physics intensively, but they continue learning french, foreign language and history. In the same way, pupils in the Literary Bac take a scientist test at Bac. Consequently, in each General Bac field, pupils continue to study both scientist and humanity subjects, except

that different weights are given to subject tests according to the specialisation. Nevertheless, we can say the system is such that all curriculum remain open for a pupil having made a Scientist bac, while a pupil with a literary Bac is not likely to succeed in a scientist higher-education field.

Once they have chosen their Bac field, pupils prepare Bac exam during two years, and they finally take it around the age of 17-18. Then they make their second fundamental decision: the choice of a curriculum after Bac, or higher-education track (actually, this decision is generally taken before they pass the BAC). They have the choice between several types of Post-Bac tracks. Preparatory classes to enter *Grandes Ecoles* (or CPGE) are the most selective fields. These classes last two years, and they allow students to take competitive exams to enter the most prestigious french schools. This type of track exists in Science, Economics, or Literature. Students can also opt for a program at University. They obtain the Licence degree after 3 years, and the Master degree after five years. They have the choice between many curriculum that we group in five subjects: Humanities, Law and Economics-Management, Science, Biology, and Sport (STAPS). They can also opt for a Health career, by choosing Medicine, Pharmacy, Nurse etc.. The last track is BTS or DUT (short technical curriculum in two years), in the production or service sector. There exists other particular Post-Bac tracks, and we integrate them in the "other" alternative in our study.

3.2. The database

We use the Panel of french pupils, 1995-2011 (*Panel d'élèves du second degré, recrutement 1995-2011*), developed by the DEPP (*Direction de l'evaluation, de la prospective et de la performance*, French Ministry of Education). This is a large size panel (17830 individuals). Pupils are interviewed since they enter in college, in 1995, until their entry on the labour market.
This panel contains several surveys. The first survey is the "recruitment survey", administered in 1995, and filled in by school principals. It includes some information about the college, identification of the pupil (sex, nationality, etc.), schooling situation (class, number of pupils in the class...), school level of the pupil when he enters college, informed by results at national evaluation at entry of college, and assessment by the scool principal about the level of the pupil in french and mathematics. Schooling before college is also reconstituted, and many information about family are collected: size of siblings, occupation of parents, nationality of parents...).

A second survey, the "tracking survey", allows to update the situation of the pupil all along schooling, each year during College (junior secondary school) and Lycée (secondary school). Consequently, each year, we know in which class is the pupil, specialized teaching chosen (foreign languages, special subjects), as well as school characteristics (*ZEP*: area targeted for special help in education, localisation...). Grades obtained at brevet and at Bac are collected in this survey.
The "family survey" of 1998 is the third survey. If the pupil has not repeated a year since his entry at College, he should be in the last year of College (last year before Lycée) when his family answer the survey. Many information are collected, first about the child and his family (family composition, school level of brothers and sisters, parent schooling background...). Other information are collected on schooling before *college*, and on parents relation with schooling: representations and practices of parents linked to child schooling, parent implication in schooling, contacts with teachers...
The "young people survey" is administered in 2002, and is directly filled in by the pupil, who is in last year of *Lycée* if he has not repeated a year since his entry in *college*. This survey gives some information about professional plans, higher education plans, representations about past studies, and self-image about three socio-emotional areas: physical self-image, capacity to build friendships, self-confidence.
Once the student ends the *lycée* and enters higher education, his annual monitoring is made through "SUP survey". Every year, we know which studies he follows.
Finally, when the pupil ends his studies and enters in the labour market, he is followed by the "EVA survey" (Entry in adult life survey) which gives some information about professional situation and possible wage.
For the moment, concerning these two last surveys, we only use the first year of the "SUP survey", and we do not use yet the "EVA survey".

3.3. The sample of pupils used in this study

Our study about Bac choices is based on people who answered the "family survey" in 1998 (86,5 % of the sample), and the "youth survey" in 2002 (78,6 % of the sample), which largely reduces the sample. We also only consider the pupils who have taken the Brevet exam, and who make studies and are followed by the survey at least until the second year of Lycée (to know which Bac field they choose), that is to say a sample of 9365 individuals. We analyse Bac choices according to grades obtained one year before at Brevet exam, in french, mathematics and foreign language.

Our study on higher-education choices concentrates on people who have passed a General Bac, because the previous choice of a Technical or Professional Bac determines almost entirely the post-Bac choice. We consider students having begun a first year of higher-education. This part of the analysis contains 4407 individuals, among them 2308 have previously chosen a Scientist Bac, 1328 an Economics Bac, and 771 a literary Bac. We investigate post-Bac choices according to grades obtained at the Baccalauréat: the average grade in science, the average grade in humanities, and in foreign language. Details about different subjects included in the grade in science, humanities and foreign language are given in Appendix 3.

4. A Model of educational choices

4.1. The theoretical model

We develop here a simple model of Baccalauréat choices, then higher-education choices.
We consider that the pupil first chooses a Bac field i, then an after-Bac (or higher-education) track j. When choosing a major of Bac, he takes into account the different possible tracks j after the Baccalauréat. We define the expected wage after a Bac i as the weighted sum of wages after the different possible after-Bac tracks j:

$$\sum_{j=1}^{n} p_{i,j} W_j$$

where $p_{i,j}$ is the objective (observed) probability of following a track j after a Bac i, and W_j some measure of the wage after a track j (we assume that it does not depends on the type of Bac).
Then we define the anticipated cost of choosing the Bac major i as a decreasing function of the abilities of the pupil:

$$C_i(a^S, a^H)$$

To simplify, we only distinguish the skill in Science a^S and the skill in Humanities a^H (including foreign language).
The utility of choosing a Bac i is given by:

$$U_i = \sum_{j=1}^{n} p_{i,j} W_j - C_i(a^S, a^H)$$

The pupil choose the Bac field bringing the highest utility.

However, pupils have only a rough idea about the costs, that they cannot measure exactly. Our crucial assumption is that there exists a stereotype which specifies that the anticipated cost is not the same for girls and boys. More specifically, we expect that boys (girls) overstimate the marginal cost of the skill in Humanities (Science) and vice-versa. So we define

$$C_i^G(a^S, a^H)$$

with G = boy, girl.

Empirically, the utility for individual k is given by:

$$U_{ki} = \sum_{j=1}^{n} p_{i,j} W_j - C_i^G(a_k^S, a_k^H) + e_{ki}$$

$$e_{ki} = \beta_k + u_{ki}$$

e_{ki} has two components. β_k is an individual term that describes individual tastes (and perhaps the existence of a norm). It includes a gender variable, that allows to take into account the fact that boys and girls may have specific preferences for some types of topics, and some others variables, for example the parents' education or past schooling that might influence the choices. u_{ki} is a random term, following a logistic distribution. Consequently, the model is specified as a multinomial logit, as we just observe choices, and not the utility of the pupil which is the latent variable.

The same decision process prevails for post-Bac choices.

4.2. The key variables

The probability of choosing a post-Bac track j after a Bac field i, $p_{i,j}$, comes from data of the French Ministry of education (exhaustive measures). They are allowed to differ for boys and girls: $p_{i,j}^G$. W_j, the wage after a post-Bac track j, comes from data of the French Ministry of labor. They also differ for boys and girls, which allows to take into account some possible discrimination on the labor market after some specific tracks and the fact that pupils may be conscious of these differences. However, pupils may differ by their level of self-confidence, that is some of them might

be optimistic and think they will be rather in the top of the distribution, and some others might think they will be in the bottom. We use a measure of this level of self-confidence in the data: "I usually succed in what I start". This three modality variable (no / quite yes / yes) is regressed with an ordered probit model on different variables (mainly answers to questions on self-image, judgements on capacities, gender ...), and the three predicted probabilities are used to weight three measures of W_j (first quartile Q1, median, third quartile Q3).
Skills a_k^S and a_k^H are measured by the grades in Science and Humanities at the end of College ($\approx$ 15 years old): g_k^S and g_k^H. The anticipated cost is now defined as:

$$\tilde{C}_i^G = \alpha_{iS}^G \, lng_k^S + \alpha_{iH}^G \, lng_k^H \ (or\ linear\ or\ quadratic)$$

Grades are a measure of how pupils perceive their own ability.

4.3. Endogeneous grades

Until now, we have considered grades as exogeneous. But grades are in fact a composite measure as they mix the true ability and the effort made by the pupil. True ability may be viewed as the return of effort:

$$g^{S,H} = a^{S,H} \times e$$

We can rewrite the anticipated cost, with for example, a log-linear form:

$$\tilde{C}_i^G = \alpha_{iS}^G \, ln(g_k^S) + \alpha_{iH}^G \, ln(g_k^H) - (\alpha_{iS}^G + \alpha_{iS}^H) ln(e)$$

If e is observed (part 6.5), it should be introduced as an additional regressor. But if e is not observed, it must be considered as a part of the error term. In this case g^S and g^H are endogeneous (correlated with the error term) and should be intrumented. More generally, even if we have an imprecise measure of the global effort in the data, in a more complete model of allocation of effort, the levels of effort in Science and Humanities should differ, and this is not enough to control for endogeneity. It is in particular the case if the pupil has an unobserved specific taste for a given topic (say math). In that case, he will probably both increase his effort in this topic and choose a major accordingly.
As instruments, we use grades obtained at the beginning of College ($6^{th} class \approx$ 11 years). Indeed, we make the assumption that there is no strategic choice of effort at this age, and that these

grades represent the true abilities a_k^S and a_k^H plus a white noise. Certainly one could argue that the stereotype is conveyed by the parents, so it is likely to early impact grades. However, we think that this phenomenon is weakened by the french structure before College. First, written homeworks are not allowed before College in France, which reduce the role of parents in schooling. In addition, before College, pupils learn the basics of mathematics and french, the fundamental knwoledge for future schooling. So it seems likely that pupils learn these two subjects with a similar intensity, in order to reach a necessary threshold of knowledge.

Two other arguments support our instrument. Schooling structure before college is very specific in France: pupils are grouped by classes, in which only one teacher is in charge of the class for all subjects. So it is likely that pupils study different subjects at school with a similar intensity, or at least according to teachings of the teacher. But later at the College, pupils have a different teacher for each subject, which means that subject become more independant, and that pupils feel more free to make some effort in specific subjects according to their tastes or future plans. To finish, beginning of the College is the beginning of adolescence, so pupils' tastes develop and could impact effort, in a larger extent than before the College.

5. Results: Bac choices

5.1. Descriptive statistics

Descriptive statistics about the sample we use to study Bac choices are presented in Table 1. Our sample contains more girls than boys (54.9% of girls and 45.1% of boys). This is very closed to national statistics given that 55.1% of pupils in the second year of Lycée are girls in 2002-2003 (DEPP-RERS, 2003). Bac choices are quite more segregated in our sample compared to national statistics (see Appendix 1). Both at the entry and the end of College, girls obtain better grades than boys in French and foreign language, and this is the contrary in Math. The difference between grades of boys and girls is always significant, but higher in French and foreign language than in Math. Boys have a comparative advantage in mathematics, on average, and girls in french, but the difference between grades in math and french is higher for boys than girls. Boys have more often a comparative advantage in mathematics, and girls in french, but more girls have a comparative advantage in math than boys in french. Boys can expect a higher expected wage than girls in all subjects. The higher wage can be expected after a scientist Bac (Bac S), both for girls and boys.

Table 1: **Descriptive statistics: Bac choice.** 9365 individuals

	Girls	**Boys**
Observations	5144 (54.93 %)	4221 (45.07 %)
% of girls / boys choosing		
General Bac		
Bac S: Scientist	46.39 %	53.61 %
Bac L: Literary	84.58 %	15.42 %
Bac ES: Economics	68.08 %	31.92 %
Technical Bac		
Bac STI: Engineer	7.05 %	92.95 %
Bac STT: Tertiary	63.15 %	36.85 %
Bac STL: Laboratory	60.95 %	39.05 %
Bac SMS: Health&Social	96.33 %	3.67 %
Bac Pro: Vocational	47.96 %	52.04 %
Mean grades at entry College (Std Dev)		
Math	14.05 (2.83)	14.59 (2.80)*
French	15.08 (2.55)	14.34 (2.67)*
Mean grades at Brevet (Std Dev)		
Math	11.83 (3.08)	11.90 (2.94)*
French	12.20 (2.21)	11.00 (2.25)*
Foreign language	12.47 (2.82)	11.53 (2.79)*
Average grade	12.16 (2.41)	11.48 (2.35)*
Gap math-french	-0.36 (2.27)	0.89 (2.26)*
% of girls/boys having a comparative advantage in		
Math	38.43%	62.85%
French	50.35%	27.01%
Mean expected wage (Std Dev)		
Bac S	1639 (168)	2073 (218)*
Bac L	1612 (172)	2020 (223)*
Bac ES	1627 (171)	2060 (217)*
Bac STI	1631 (163)	2060 (217)*
Bac STT	1604 (170)	2048 (220)*
Bac STL	1603 (180)	2040 (216)*
Bac SMS	1598 (177)	2030 (234)*
Bac Pro	1596 (174)	2045 (218)*
Other variables		
Age entry (Mean)	11.215 (0.44)	11.219 (0.44)
Born abroad (%)	2.64	2.13
Repeat a year (%)	17.57	23.71

*: means are significantly different between boys and girls, at 5% level

5.2. Self-evaluation

Before presenting results about Bac field choices, we present here direct results about pupils self-evaluation of their own abilities in mathematics, french and foreign language separately. They answer this question seven years after they enter College, which means that if they have not repeated a year, they should be at the end of the lycée at this time (just before taking the Baccalauréat). It is a retrospective measure about their own assessment of their skills when they were at the end of the College. The question is the following: "At the end of College ($\approx$ 15 years old), would you say that in Math [French, Foreign Language], you are: A pupil with high difficulties / A pupil with few difficulties / A quite good pupil / A very good pupil." So we have three four-modalities variables, one for each subject. In order to investigate whether girls and boys evaluate their skills in a different way, we lead a trivariate ordered probit on sef-evaluation about abilities [3]. This simultaneous estimation allows to take into account the correlation of error terms for each pupil. We use a set of control variables, including grades obtained at Brevet and some indicators about self-confidence (ambition for future higher-education, a member of the family has already made the same educational track he considers, the pupil has a precise idea about future job, likes speaking publicly in class, is complacent, likes his/her appearance, is easily influenced, feels able to make as well as other people). We add the social-professional category and education of parents, help for homework from parents, and whether the pupil has repeated a year. We also take into account the school establishement of the pupil by adding a school cluster.

Table 2 reports a summary of the results, and complete regression results are in Apendix 4. We use two specifications. In the second one, we use grades interacted with gender variables, while we do not cross grades with gender in the first one. Introducing control about self-confidence or not does not change results (see Appendix 4). Table 2 shows that pupils evaluate their skills according to their grades. First part of the table shows that girls overestimate themselves in French, and underestimate themselves in Math and foreign language. This could be a first evidence of the presence of the stereotype. However, if we allow grades to have a different impact for boys and girls (by interacting grades and gender), we observe that girls underestimate themselves in all subject, even French. Consequently, we need to investigate more precisely the question, by studying the impact of grades on educational choices, and testing whether girls and boys make different choices according to their grades.

[3] We use the Stata CMP command written by David Roodman, 2011.

Table 2: Pupil self-evaluation of their abilities

Self-perception	**Math**	**French**	**Language**
Without grades interacted with gender			
girl	-0.14***	0.17***	-0.13***
	(0.027)	(0.027)	(0.026)
grade Math	0.37***	-0.11***	-0.12***
	(0.008)	(0.006)	(0.006)
grade French	-0.10***	0.34***	0.05***
	(0.009)	(0.010)	(0.009)
grade Language	-0.05***	0.02***	0.31***
	(0.007)	(0.007)	(0.008)
With grades interacted with gender			
girl	-0.50***	-0.39***	-0.77***
	(0.136)	(0.136)	(0.134)
g Math*Boy	0.33***	-0.11***	-0.12***
	(0.010)	(0.008)	(0.008)
g French*Boy	-0.08***	0.34***	0.05***
	(0.013)	(0.014)	(0.013)
g Language*Boy	-0.04***	0.00	0.28***
	(0.010)	(0.010)	(0.011)
g Math*Girl	0.40***	-0.10***	-0.13***
	(0.010)	(0.008)	(0.008)
g French*Girl	-0.11***	0.35***	0.06***
	(0.013)	(0.014)	(0.012)
g Language*Girl	-0.06***	0.03***	0.34***
	(0.010)	(0.009)	(0.011)

Number of observations: 9294
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.3. Bac choices

Table 3 displays the main results about Baccalauréat field choices (gender effect and the impact of grades), considering the Scientist Bac (Bac S) as the alternative reference. Appendix 5 shows complete regression results. This is a multinomial logit model with 8 alternatives corresponding to the different possible bac fields. Main explanatory variables are gender variable (equal to 1 if the pupil is a girl, 0 otherwise) and grades obtained at Brevet (at the end of College). In a first specification, we use the average grade (including the grade in math, french, and foreign language) to take into account the average level of the pupil, and the gap between the grade in math and the grade in french, in order to capture whether the pupil has a comparative advantage in mathematics or french. In a second specification, we include the three grades obtained in each subjects (*forthcoming*). Grades are here considered as exogeneous, we relax this assumption in the next section. The expected wage is included as a specific alternative variable. We add a set of control variables: some possible learning difficulties (age at the entry of College, a dummy variable indicating whether a year has been repeated during College), variables about family (education of the father and the mother, born abroad, the mother/the father helps for homeworks), and some indicators about self-confidence (content about himself, feel able to make as well as other people, influenced by other people).

Table 3: Bac choices. Ref: Scientist Bac (Bac S)

	General Bac			**Technical Bac**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	S-ref	**L**	**ES**	**STI**	**STT**	**STL**	**SMS**	**Pro**
Expected wage	0.0039*** (2.70)							
Girl		0,60	0,47	-5,45***	0,20	-0,23	3,00*	0,17
		(-0,95)	(-0,63)	(-1,40)	(-0,70)	(-1,52)	(1,68)	(-0,79)
Average grade		-0,21***	-0,26***	-0,64***	-0,64***	-0,67***	-0,65***	-1,01***
		(-0,06)	(-0,03)	(-0,04)	(-0,04)	(-0,09)	(-0,13)	(-0,04)
Average G*Girl		-0,03	-0,05	0,22**	-0,02	-0,05	-0,09	-0,08
		(-0,06)	(-0,04)	(-0,11)	(-0,05)	(-0,12)	(-0,14)	(-0,06)
Gap Math-French		-0,65***	-0,32***	-0,03	-0,24***	-0,24***	-0,31**	-0,18***
		(-0,05)	(-0,03)	(-0,03)	(-0,03)	(-0,08)	(-0,13)	(-0,03)
Gap M-F*Girl		0,04	0,02	-0,22***	-0,09**	0,18*	0,03	-0,11***
		(-0,05)	(-0,04)	(-0,09)	(-0,04)	(-0,10)	(-0,14)	(-0,04)

Number of observations: 9365

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

We first observe that the expected wage is positive and significant, which means that all things

being equal, pupils have a higher probability to choose a field leading to high-paid jobs. There is a "pure" gender effect for the choice of STI (technical engineer) and SMS (Health and Social) Bac: all things being equal, boys choose more STI than girls, and girls choose more SMS than boys. It's not surprising given that very few girls [boys] choose STI [SMS]. We observe that good students (having a good average grade at the end of College) choose more a Scientist Bac rather than all other types of Bac, given that all parameters are negative and significant. Considering the interaction with the gender variable, we observe that girls and boys behave similarly to their average level, except for the Bac STI. With an higher average grade, girls choose more often a Bac STI than boys. But this effect is actually offsetted by the very important "pure" gender effect. Now, having a comparative advantage in math increases the probability to choose a scientist Bac (Bac S) rather than all other Bac majors, except for the STI alternative, whose coefficient is not significatif and very weak. Regarding gender effect, we show that girls and boys seem to behave differently to their grade difference, especially for Technical Bac. Indeed, pupils choose less often a General L (literary) or ES (economics) Bac and a Technical Bac compared to a Bac S if they obtain good grades in math compared to french, but furthermore we show that girls choose even less a Technical Bac than boys if they have a comparative advantage in math. Perhaps girls value more a general Bac rather that boys. We also note that among pupils having a comparative advantage in math, girls choose more often than boys a Bac STL (laboratory) rather than a Bac S, but they both choose more a Bac S than a Bac STL in all.

In order to make more readable the statistical differences between the different coefficients, we present in Table 5 the Wald tests of comparison (explanatory legend is in table 4).

Table 4: Bac choices. Variant references. Legend

	Reference		
Choice	Bac S		
L	Average Grade Av G*Girl	Gap Math-French (Gap M-F)*Girl	Gender effect

+++ (- - -): Coefficient with a positive (negative) sign, ***
++ (- -): **, + (-): *

Table 5: Bac choices. Variant references

	REFERENCE ALTERNATIVE																				
Choice	**S**			**L**			**ES**			**STI**			**STT**			**STL**			**SMS**		
L	- - -	- - -																			
ES	- - -	- - -			+++																
STI	- - -		- - -	- - -	+++	- - -	- - -	+++	- - -												
	+ +	- -		++	- - -		++	- -													
STT	- - -	- - -		- - -	+++		- - -	+ +			- - -	+++									
		- -			- - -			- - -		- - -											
STL	- - -	- - -		- - -	+++		- - -				- - -	+++									
		+								-	+++			+++							
SMS	- - -	- -	+	- - -	+++		- - -				- -	+++			+			+			
										-											
Pro	- - -	- - -		- - -	+++		- - -	+ + +		- - -	- - -	+++	- - -	++		- - -			- - -		-
		- - -			- - -			- - -		- - -							- - -				

Tables 4 and 5 allow to directly compare the effects of grades on choosing a given Bac field rather than another. Each line represents a choice alternative, and each column represents a different alternative reference. For example, considering the first column, it shows results concerning successively the choice of a Bac field (first L, then ES, STI, etc.) considering the Bac S as the reference (this is exactly the table 3). The second column represents Bac choices, considering Bac L as the reference, then Bac ES etc.. Each case is composed of six cells (Table 4). The first line represents first the effect of the average grade, then the difference between the grade in math and in french, and finally the pure gender effect (the gender variable). The second line shows first interaction of the average grade and gender, than the interaction of difference of grades with gender. If the coefficient is positive and significant at the 1% level, we mention it by "+++", "++" at the 5% level, and "+" at the 1% level. In the same way, a negative sign is indexed by "- - -", "- -" and "-".

We observe that a pupil having a good average grade at the end of College choose less all fields compared to scientist bac (Bac S), and choose less all technical fields compared to a literary Bac (Bac L) or economics Bac (Bac ES). Consequently, pupils having a good average level choose first more a bac S compared to all other Bac (Bac L and ES included), and in a second phase choose more a Bac ES and L compared to a Technical Bac. Moreover, boys and girls behave similarly, except for the choice of the STI bac (engineer Bac), as seen before. Pupils having a comparative advantage in math choose more a Bac S than all other fields, but they choose more a Technical field compared to Bac L and ES. In addition, interaction with gender variable shows that this last effect is lower for girls, in the sense that girls having a comparative advantage in math will choose less a technical Bac than boys, and this is the case for STI (engineer), STT (tertiary), and professional Bac.

These results seem to show that pupils who are better in math, but not enough to enroll a General Bac S (the most favourite bac), choose more a Technical field, in order to value at best this skill in math. But this effect is lower for girls: when they obtain better grades in math, they prefer stay in the General field rather than opting for a technical field. The pure gender effect is significant only for the Bac STI (engineer) and SMS (health and social) again, because very few girls [boys] choose the first [second].

Considering now technical and professional Bac together, we observe that the professional Bac seems to be the less favourite field, as pupils favour more all other field if their average grade increases. If they have a comparative advantage in math, girls choose more a Bac STL

(laboratory) than boys compared to a Bac STT (tertiary).

To sum up, it appears that the Bac S is the favorite Bac in the sense that if pupils have a good average grade, they choose "by default" this Bac field. In addition, pupils seem to make educational choices in an efficient way according with their grades, as they choose more a field in which they are more talented. Among pupils with a comparative advantage in math, but having not enough good grades to enroll a Bac S, boys choose more often a scientist oriented Technical Bac, to value at best this skill in math. However, girls prefer a General literary or economic Bac, while the choice of a scientist-oriented technical Bac would allow to value at best their ability in Math. Therefore, the stereotype does not act as we expected. It has no impact on the choice of specific subjects (Science versus Literature), because girls having good grades will choose the Bac S in the same way than boys. But it has more impact on the choice of a General Bac rather than a Technical Bac for girls, and more specifically a literary or economic General Bac rather than a scientist technical Bac. In addition, we can add that the stereotype does not act on best students, who choose a general Bac S anyway, but more on average girls best in math.
Perhaps girls under-evaluate their talent in mathematics, and their ability to value at best this skill after a technical Bac. Of course they choose a bac S in the same way than boys, but after a Bac S, they can choose many different tracks, not necessary related to fundamental science, like health and social, economics etc. in which they could anticipate good returns for them. But after a technical Bac, higher-education tracks are very determined by the Bac major, and they could under-estimate their abilities to succeed in basic science. Or perhaps this is due to a negative perception by girls about technical fields which appear as more practical and masculine. This falls more within the social norm. However, if this explanation is the good one, how to explain that the pure gender effect is most of the time not significant ?

5.4. Endogeneous grades

Until now, we have considered grades as exogeneous regressors. However, as we have explained it in the theoretical part, grades may be endogeneous, as they contain both the "pure" ability and the effort.
We use the grades obtained at the beginning of College in math and french as instruments for grades in math, french, and foreign language at the end of College (Brevet). More precisely, we

endogenise the average grade, and the gap between the grade in math and french. We estimate the model in two stages, using the control function approach. We first estimate the average grade obtained at Brevet [the difference of grades] according to the average grade [the gap of grades] obtained at the beginning of College and a set of control variables. Then we extract residuals and we include them as an estimator in the Bac multinomial logit.
This approach shows that results are very similar considering grades as exogeneous or endogeneous. Error terms are sometimes significant, but there is no effect on the average grade and the difference of grades. Consequently, grades at Brevet seem to be exogeneous, or at least the potential correlation between the error term and the grades has no significant impact on the effects of grades.

[to be developped]

6. Results: Post-Bac choices

In this part, we analyse higher-education choices by focusing only on students having made a general Bac. Indeed, after a technical a professional Bac, most of pupils decide to enroll a BTS-DUT (short technical field in two years), and the choice of the speciality is almost entirely determined by the major chosen at Bac. So post-Bac choices after a technical or professional Bac are very deterministic. Furthermore, we study higher-educational choices conditional to the general Bac field chosen before. Thus we lead three separate multinomial logit, the first on the sample of students having made a scientist Bac (bac S), then a literary Bac (bac L) and finally an economics Bac (bac ES). Indeed, grades obtained in science and humanities for pupils coming from different Bac fields do not represent the same signal. The grade in science obtained after a Bac S, and this grade get after a Bac L is not based on the same test, as the grade in humanities. Requirements and programs are different and it appears necessary to study post-Bac choices according to signal about abilities representing the same information. In addition, it is likely that pupils have unobservable characteristics which affect both the choice of the Bac and then the choice of the post-Bac track. Such an analyse based on pupils having passed the same Bac partly reduce this issue.

6.1. Descriptive statistics

Post-Bac choices can be grouped into four categories. Preparatory classes (CPGE, we often mention "prepa" in the rest of the document) are the most selective fields. They last two years, and prepare student to competitive exams to enter "Grandes Ecoles". We differentiate preparatory classes into three groups: Scientist, Literary and Economics. Pupils can also choose short technical tracks, as BTS (Brevet de technicien supérieur) or DUT (Diplôme universitaire de technologie). These tracks last two years. Students can enter in the labour market after these two years, or they can join University or other tracks in order to pursue their studies. Many majors exists, and we group them in two specialities: production or secondary tracks and services or tertiary tracks. The third field corresponds to the University, in which students can expect a Master degree, up to a doctorate. We classify university majors into 5 categories: Economic-Law-Management, Humanities (literature, philosophy, sociology, foreign language, etc.), Science (math, physics), Biology, and Sport (STAPS). We add a fourth field, which differs according with the Bac field. For pupils having passed a scientist Bac (bac S), this fourth category is Health and Social, and includes medicine, pharmacy, nurse, social workers, and paramedical professions. For pupils having passed a literary Bac (Bac L) or economics (Bac ES), this fourth category corresponds to "other", and include other types of fields, as specific diplom trainings, or scientist fields at University, health and social, because few people choose these majors after a Bac L or ES.

Table 6 reports post-bac choices of pupils according to the bac field. We observe that most of people having passed a Bac S choose a Scientist Prepa (20.1 %), then Medicine (14.4 %), BTS Secondary (14.1 %), BTS Tertiary (10.7 %) and Science at University (9.9 %). In smaller proportions, quite numerous yet, these pupils choose Humanities, Biology, Economics and Law. Higher-education choices after a Bac L or ES are more pronounced. Indeed, among Bac L, 60 % of students choose Humanities at University, then 13.5 % BTS tertiary, 12.4 % Economic and Law at University, and 9 % Literary Prepa. Consequently, 95 % of choices are composed by 4 fields. After a Bac ES, 30.2 % choose Humanities, 27.7 % BTS Tertiary, and 24.7 % Economics-Law. In the same way, 83 % of choices are explained by three tracks. In order to study educational choices after a Bac L or ES, we group higher-educational tracks in the four alternatives described in the last paragraph.

Table 6: **Post-Bac choices: total number of pupils**

	After Bac S		**After Bac L**		**After Bac ES**	
	%	Tot number	%	Tot number	%	Tot number
Preparatory classes						
Prepa Science	20.1	481	-	-	-	-
Prepa Eco	3.1	74	0.4	3	5.0	64
Prepa Literature	1.3	31	9.0	65	1.9	24
Health						
Health&Social	4.9	117	2.6	19	5.1	64
Medicine, Pharma	14.4	343	0.1	1	0.4	5
Short technical tracks (BTS)						
BTS Secondary	14.1	336	0.3	1	0.5	6
BTS Tertiary	10.7	256	13.5	97	27.2	337
University						
Univ Eco,Law	4.9	117	12.4	89	24.7	306
Univ Humanities	6.8	163	60.0	430	30.2	373
Univ Science	9.9	236	-	-	1.1	13
Univ Biology	6.2	147	-	-	-	-
Univ Sport	3.7	88	1.5	11	3.6	45
Total	100	2389	100	717	100	1237

Table 7 displays the median wages after each post-Bac track, without differentiate according to the bac field [4]. Highest wages can be expected after Medicine and Pharmacy, and all preparatory classes. Lower wages correspond to BTS, Humanities and Sport. For all tracks, boys can expect a higher wage than girls. The gender gap is the highest after an economic preparatory class (749 €), medicine and pharmacy (559 €) and a scientist prepa (678 €). The gender gap is the lowest after Health and Social, and Humanities at University.

Table 8 shows descriptive statistics about post-Bac choices, according to Bac field chosen before. Gender differences about choices after a Bac S are quite high. Boys choose more a Scientist Preparatory classe (26.84 %) or a BTS Secondary (20.05 %), while girls choose more Medicine (21.12 %). Girls choose also more often Health & Social fields than boys, as Economic, Law, Biology and Humanities at University. Grouping tracks in four categories, we find the same conclusions after a Bac S. After a bac L, girls choose really more often a technical short track (BTS) than boys. This is certainly due to the weight of services fields. At the opposite, boys choose a little more University than girls. After a Bac ES, boys seem to choose more a preparatory class than girls, and a little more a BTS.

[4]Source: INSEE 2000

Table 7: **Median wages**

	Girls	Boys	Diff
Prepa Science	1965	2643	678
Prepa Eco	2173	2922	749
Prepa Literature	1865	2309	444
Health & Social	1604	1827	222
Medicine, Pharma	2347	2905	559
BTS Secondary	1264	1643	379
BTS Tertiary	1276	1658	382
Univ Eco,Law	1779	2203	424
Univ Humanities	1443	1786	343
Univ Science	1744	2159	415
Univ Biology	1597	1977	380
Univ Sport	1434	1575	380

Table 8: **Descriptive statistics: Bac choices**

	After a Bac S 2389 students		**After a Bac L** 717 students		**After a Bac ES** 1361 students	
	Girls	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**
Observations	1122 (46.97%)	1267 (53.03%)	617 (86.05%)	100 (13.95%)	950 (69.8%)	411 (30.2%)
% of girls / boys choosing						
Prepa Science	12.57 %	26.84 %				
Prepa Eco	3.65 %	2.60 %				
Prepa Literature	1.87 %	0.79 %				
Health&Social	8.73 %	1.50 %				
Medicine, Pharma	21.12 %	8.37 %				
BTS Secondary	7.31 %	20.05 %				
BTS Tertiary	9.00 %	12.23 %				
Univ Eco,Law	6.68 %	3.31 %				
Univ Humanities	9.45 %	4.50 %				
Univ Science	8.11 %	11.44 %				
Univ Biology	8.73 %	3.87 %				
Univ Sport	2.76 %	4.50 %				
Total	100 %	100 %				
Grouped tracks						
Prepa	18.09 %	30.23 %	8.54 %	8.70 %	5.47 %	8.76 %
BTS-DUT	16.31 %	32.28 %	13.70 %	5.22 %	23.79 %	28.47 %
University	35.74 %	27.62 %	65.68 %	73.04 %	55.47 %	51.09 %
Other	-	-	12.08 %	13.04 %	15.26 %	11.68 %
Health&Social	29.86 %	9.87 %	-	-	-	-
Total	100 %	100 %	100 %	100 %	100 %	100 %
Mean grades at Bac (Std Dev)						
Sciences	11.78 (2.71)	12.16 (2.61)*	11.42 (2.91)	11.79 (3.01)	10.62 (2.70)	10.34 (2.49)
Humanities	11.12 (2.01)	10.24 (2.12)*	10.62 (2.00)	10.52 (2.20)	10.61 (1.81)	10.24 (1.80)*
Foreign language	11.60 (2.85)	10.65 (2.98)*	11.49 (2.62)	11.32 (2.92)	11.42 (2.61)	10.89 (2.59)*
Average grade	11.49 (1.99)	11.01 (2.01)*	11.18 (1.90)	11.21 (2.01)	10.88 (1.81)	10.49 (1.60)*
Gap science-huma	0.66 (2.56)	1.93 (2.63)*	0.80 (2.84)	1.27 (3.29)	0.01 (2.58)	0.10 (2.68)

*: means are significantly different between boys and girls, at 5% level

Considering grades obtained at Baccalauréat, both in Bac S and L, boys obtain quite higher grades in science than girls, but the difference is significant only for pupils in Bac S. In humanities and foreign language, girls obtain better grades than boys in all Bac fields. The difference of grades is never significant for the Bac L. Both boys and girls have a comparative advantage in Science in all Bac fields (as measured by the grade). Concerning the Bac ES and L, perhaps this is due to the fact it is easier to obtain good grades in science (more exercises) than in literary subjects (more dissertations). However, the difference between the grade in science and the grade in humanities is higher for boys.

These first descriptive statistics show some gender differences in abilities and educational choices. We analyse them in the next sextions.

6.2. Post-Bac choices, conditional to a Bac S

Table 9 shows results about higher-educational choices of pupils having passed a General Scientist Bac, and considering grades as exogeneous. Full results are shown in Appendix 6. As for bac choices, we lead a multinomial logit model, with 12 alternatives corresponding to different possible choices. The reference alternative is the scientist preparatory class, and the expected wage is included as an alternative-specific variable. We consider here grades obtained at Baccalauréat, that we group into three subject. So we include the average grade in scientist subjects, in humanities subjects, and in foreign language (Details about specific subjects are given in Appendix 3).

The expected wage is positive and significant, but lower than the expected wage for Bac choices. All things being equal, at equal grades, girls choose more an economic preparatory class and medicine than boys (the first parameter is higher than the second), while boys choose more a scientist preparatory class. Students seem to behave in an efficient way according to their grades: best pupils in science have a higher probability to choose a scientist prepa than all other fields. Pupils having good grades in humanities choose more an economic and in a larger extent a literary Prepa rather than a scientist prepa, but they choose less a BTS (short technical field), science and sport at University rather than a scientist prepa. However, they have a higher probability to choose economics and law at university. Having good grades in foreign language increases the probability to choose an economic prepa rather than a scientist prepa, but there is

no effect for the literary prepa. Having good grades in foreign language decreases the probability to choose all other fields.

We observe that girls behave differently with their grades in science compared to boys. Having good grades in science increases the probability to enroll a scientist prepa, but this effect is lower for girls, for each alternative. Indeed, the effects of interaction between grade in science and gender are almost always positive, which reduces the negative effect of the grade in science. This gender effect is not always significant, but this may be due to the small size of the sample. It means that when grades in science increase, girls will choose less a scientist prepa than boys. We observe the opposite for the grade in humanities. When this grade increases, girls have a higher probability to choose a scientist prepa than boys. This is true when the choice of the scientist prepa is compared with the choice of humanities and biology at University. This is also the case when the comparison is made with an economic prepa, medicine, secondary BTS and economics-law, but yet not significant. We find the same direction effect for the grade in foreign language, with a significant effect for an economic prepa and a tertiary BTS, and a negative but not significant effect for a literary prepa, a secondary BTS, and science, biology and sport at University.

These results seem to show that boys may be more sensitive than girls to grades in science, and girls may be more sensitive to grades in humanities and foreign language than boys, when choosing a scientist prepa. Girls consider more their good skills in humanities and foreign language as a good signal to enter a scientist preparatory class than boys, and boys use more their good skills in science to decide to enroll this field.

In addition, we note that interactions of grades with gender for medicine are quite weak and not significant, while the "pure" gender effect is positive. This could mean that girls choose more medicine because they have a preference for this field, but not because they value their grades differently than boys. There is also a "pure" gender effect for the choice of economic prepa, but grades impact also differently boys and girls decisions. This could mean that both preferences and beliefs about abilities impact the choice of an economic prepa.

Forthcoming: Results with grouped choices.

Table 9: **Post-Bac choices, conditional to a Bac S**

	Prepa classes			**Health**		**Short Technical**		**University**				
	Science REF	Eco	Literature	Health & social	Medicine, Pharma	Secondary	Tertiary	Eco, Law	Humanities	Science	Biology	Sport
Expected wage	0.0016***											
Girl		3.02**	0.20	-0.17	2.10*	0.98	0.55	0.35	0.93	-0.13	1.82	-1.06
		(1.50)	(3.26)	(1.58)	(1.08)	(1.18)	(1.24)	(1.56)	(1.39)	(1.28)	(1.40)	(1.95)
Grade Huma		0.24**	0.43***	-0.09	0.06	-0.18***	-0.22***	0.18*	0.06	-0.17***	-0.00	-0.26***
		(0.10)	(0.16)	(0.14)	(0.07)	(0.06)	(0.06)	(0.10)	(0.10)	(0.06)	(0.09)	(0.09)
Grade Lang		0.20***	0.13	-0.36***	-0.10**	-0.14***	-0.05	-0.14**	-0.10	-0.09**	-0.10	-0.20***
		(0.08)	(0.11)	(0.10)	(0.05)	(0.04)	(0.04)	(0.07)	(0.07)	(0.04)	(0.07)	(0.06)
Grade Science		-0.32***	-0.46***	-0.40***	-0.30***	-0.33***	-0.23***	-0.53***	-0.51***	-0.35***	-0.53***	-0.40***
		(0.07)	(0.10)	(0.09)	(0.05)	(0.04)	(0.05)	(0.08)	(0.07)	(0.05)	(0.07)	(0.08)
G Huma*Girl		-0.14	-0.04	-0.01	-0.08	-0.12	0.01	-0.19	-0.25*	-0.05	-0.22*	0.23
		(0.15)	(0.22)	(0.17)	(0.10)	(0.10)	(0.11)	(0.14)	(0.13)	(0.10)	(0.12)	(0.15)
G Lang*Girl		-0.21**	-0.07	0.07	-0.02	-0.08	-0.13**	0.03	0.08	-0.08	-0.08	-0.15
		(0.11)	(0.15)	(0.12)	(0.07)	(0.08)	(0.07)	(0.09)	(0.09)	(0.07)	(0.09)	(0.10)
G Science*Girl		0.18*	0.13	0.13	0.07	0.06	0.07	0.17*	0.12	0.10	0.17*	-0.02
		(0.10)	(0.15)	(0.11)	(0.07)	(0.07)	(0.08)	(0.10)	(0.10)	(0.07)	(0.09)	(0.12)
Observations	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Now, what happens if grades at baccalauréat become endogeneous? As the instrument for grades obtained at bac, we use the grades obtained at Brevet (so at the end of College). As before, we use the control function approach. The first results show that the residual of the equation for the grade in science is strongly positive and clearly more pronounced than for other grades. This suggests that the grade in science is endogeneous, in the sense that there is a strategic choice of effort in science by pupils during the lycée, which interacts with higher-educational choices. In addition, it means that the effort is made in a larger extent in science rather than in foreign language and french, on average. This leads to underestimate the true effect of the grade in science to choose a scientist preparatory class rather than another track.

Results with endogeneous grades: work in progress.

6.3. Post-Bac choices, conditional to a Bac L

In order to investigate post-bac choices after a Bac L, we group alternatives into four groups: Preparatory classes (literaty prepa actually), BTS, University (mostly economic-law and humanities), and "other" (health & social, and some specific diploma trainings). The alternative reference is preparatory class here.

Among pupils having made a Bac L (table 10), there is no "pure" gender effect. We can also note that the expected wage is not significant to explain higher-educational choices after a Bac L. Pupils having good grades in humanities and science at Baccalauréat choose more often a preparatory class than all other tracks. Grades in foreign language do not have any effect, except that they increase the probability to choose a BTS rather than a prepa, but this effect remains only for boys.

Concerning gender effects, having good grades in science increases the probability to choose a prepa, but this effect is really lower for girls, as the interaction variable of grade in science and gender is positive. It is significant only for "other" fields, but the other coefficients are quite high. Consequently, boys are more sensitive than girls to their grades in science in order to enroll the most prestigious track. In other words, boys consider more their good ability in science as the signal they are able to succeed in preparatory class. This result could mean that girls under-estimate their talent in science compared to boys, or that boys over-estimate their ability in science.

Concerning the grade in humanities, having good grades increase the probability to choose a prepa rather than all other fields, and the effect is the highest when the choice of a prepa is compared

Table 10: **Post-Bac choices, conditional to a Bac L**

	Prepa REF	**Other**	**Short Technical**	**University**
Expected wage		0.001		
Girl		1.18	0.14	0.69
		(4.268)	(5.153)	(4.065)
Grade Huma		-0.45**	-1.28***	-0.63***
		(0.224)	(0.381)	(0.217)
Grade Lang		0.06	0.60*	0.19
		(0.228)	(0.327)	(0.209)
Grade Science		-0.44**	-0.54**	-0.38**
		(0.220)	(0.216)	(0.191)
G Huma*Girl		-0.31	0.54	-0.01
		(0.260)	(0.405)	(0.246)
G Lang*Girl		-0.14	-0.60*	-0.24
		(0.248)	(0.343)	(0.224)
G Science*Girl		0.39*	0.25	0.23
		(0.233)	(0.230)	(0.201)
Constant		6.44	7.51	7.31
		(7.199)	(8.011)	(6.531)
Observations	771	771	771	771

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

to technical fields (BTS). However, girls choose less than boys a preparatory class compared to a BTS if their grades in humanities increase (this is certainly due to the weight of services fields), but girls choose more than boys a prepa compared to "other" fields in that case. These two effects appear not significant, but yet quite high. Both girls and boys behave similarly to their grade in humanities for the choice of a prepa rather than a track at University. If they obtain good grades in foreign language, boys choose more a technical field, while girls do not use grades in foreign language for their educational choices.

To conclude, girls decide less often than boys to enroll a preparatory class (the highest-paid track) when grades in science increase. In the same way, girls choose less than boys a preparatory class rather than a technical field (BTS) when grades in humanities increase. This behaviour seems to be detrimential for girls, as the expected wage is the highest after a prepa. However, we find the contrary for the "other" field, because if grades in humanities increase, girls choose more a preparatory class rather than "other fields" compared to boys.

6.4. Post-Bac choices, conditional to a Bac ES

Table 11 reports choices after a Bac ES, and the reference alternative is always preparatory class (economic and literary prepa). The technical alternative (BTS) contains almost only services tracks (6 students choose a production track in our sample). At University, they choose mainly economics, law and humanities.

The expected wage is now significant, but only at the 10% level. As for educational choices after a Bac L, there is no "pure" gender effect. Students enroll more often a preparatory class than other fields if they obtain good grades in humanities, but this is less the case for the choice of prepa versus university. We find the same result concerning the grade in foreign language, but the effect is now lower for the choice of prepa versus "other" fields. Having good grades in science increases the probability to choose a prepa versus all other type of fields. Concerning grades crossed with gender, girls seem to choose more often a prepa than boys when they have good grades in humanities, as this crossed variable is always negative, although not significant. On the contrary, boys decide more than girls to enroll a prepa when they obtain good grades in science, as the grade in humanities crossed with gender is always positive, decreasing the positive effect for

Table 11: **Post-Bac choices, conditional to a Bac ES**

	Prepa REF	**Other**	**Short Technical**	**University**
Expected wage	0.0019*			
Girl		0.60	0.34	0.10
		(2.399)	(2.118)	(2.105)
Grade Huma		-0.38**	-0.37**	-0.14
		(0.172)	(0.146)	(0.136)
Grade Lang		-0.15	-0.25**	-0.25**
		(0.133)	(0.117)	(0.117)
Grade Science		-0.16*	-0.25***	-0.29***
		(0.094)	(0.089)	(0.082)
G Huma*Girl		-0.12	-0.23	-0.27
		(0.215)	(0.193)	(0.181)
G Lang*Girl		-0.01	-0.05	0.03
		(0.164)	(0.150)	(0.146)
G Science*Girl		0.05	0.21*	0.18*
		(0.119)	(0.113)	(0.104)
Constant		-0.72	4.95	3.42
		(5.262)	(4.865)	(4.394)
Observations	1328	1328	1328	1328

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

girls of the grade in science on the choice of prepa. This effect is however only weakly significant. This effect does not act for the "other field" alternative. Girls and boys do not behave differently to their grades in foreign language, as the interaction variables are weak and not significant.

Thus when choosing the most selective and prestigious field, boys are more sensitive than girls to grades in science, and girls are more sensitive to grades in humanities than boys.

6.5. Introducing a measure of effort

[To be completed]

The panel we use contains some measures of effort, but only for the second year of higher education. There are three variables: students report the number of hours of courses planed, the number of hours of courses effectively made, and the number of hours of personnal work.

In this part, we try to use these information to proxy the level of effort made during the lycée. It is clearly only a proxy as the effort exerted after the Bac may differ from the effort made during the lycée. Both efforts are however likely to be correlated. As stated above, considering these variables as a proxy for the effort made during lycée allows to assume that grades at Bac are exogeneous, because the effort is not in the error term anymore.

We include two measures of the effort here. The first is related to attendance, and is measured as the effective hours of courses divided by the planed hours of courses. The second measure is the personal work of the student.

Table 12 shows results for pupils after a Bac S. Given that effort variables are available only for pupils having made a second year in higher-education, the considered sample is smaller. The first specification of the table 12 reports results without effort, but based on the smaller sample, in order to make comparisons with previous results on the complete sample. The second specification contains results including the two effort measures as explanatory variables. The alternative reference is always scientist preparatory class.

Comparing results from this smaller sample (table 12) with the previous complete sample (Table 9), we note that the pure gender effect appearing with economic prepa and medicine for girls do not appear significant with this smaller sample, but the effect is always positive and quite important.

Table 12: **Post-Bac choices, after Bac S, with and without effort**

	Prepa classes			**Health**		**Short Technical**		**University**				
	Science REF	Eco	Literature	Health & social	Medicine, Pharma	Secondary	Tertiary	Eco, Law	Humanities	Science	Biology	Sport
Expected wage	0.00***											
Girl		1.74	0.78	-1.35	1.27	0.64	0.24	-0.85	-0.10	-0.74	1.00	-3.08
		(1.60)	(3.69)	(1.74)	(1.20)	(1.28)	(1.37)	(1.70)	(1.59)	(1.41)	(1.66)	(2.18)
grade huma		0.17*	0.49***	-0.11	0.04	-0.21***	-0.23***	0.16	0.04	-0.18***	-0.00	-0.32***
		(0.10)	(0.18)	(0.16)	(0.08)	(0.06)	(0.07)	(0.11)	(0.12)	(0.07)	(0.10)	(0.11)
Grade lang		0.20***	0.17	-0.41***	-0.10*	-0.14***	-0.06	-0.14**	-0.09	-0.08*	-0.12	-0.21***
		(0.08)	(0.12)	(0.12)	(0.05)	(0.04)	(0.04)	(0.07)	(0.08)	(0.05)	(0.08)	(0.07)
Grade science		-0.31***	-0.43***	-0.37***	-0.32***	-0.29***	-0.24***	-0.57***	-0.56***	-0.36***	-0.56***	-0.39***
		(0.08)	(0.10)	(0.11)	(0.06)	(0.05)	(0.05)	(0.09)	(0.08)	(0.06)	(0.09)	(0.09)
G huma*Girl		-0.07	-0.07	0.08	-0.03	-0.08	0.03	-0.11	-0.21	0.00	-0.17	0.33*
		(0.15)	(0.23)	(0.19)	(0.11)	(0.11)	(0.12)	(0.15)	(0.14)	(0.11)	(0.14)	(0.17)
G lang*Girl		-0.16	-0.10	0.16	-0.03	-0.07	-0.13*	0.03	0.08	-0.07	-0.09	-0.11
		(0.11)	(0.17)	(0.13)	(0.07)	(0.08)	(0.07)	(0.10)	(0.10)	(0.08)	(0.10)	(0.11)
G science*Girl		0.15	0.14	0.08	0.09	0.03	0.07	0.19	0.19*	0.10	0.22**	0.03
		(0.11)	(0.15)	(0.13)	(0.07)	(0.08)	(0.09)	(0.12)	(0.11)	(0.08)	(0.11)	(0.13)
Observations	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044

	Science REF	Eco	Literature	Health & social	Medicine, Pharma	Secondary	Tertiary	Eco, Law	Humanities	Science	Biology	Sport
Expected wage	0.00***											
Girl		1.56	0.57	-1.28	1.36	0.52	0.13	-0.70	-0.00	-0.75	0.87	-3.48
		(1.57)	(3.69)	(1.78)	(1.28)	(1.33)	(1.42)	(1.71)	(1.57)	(1.43)	(1.70)	(2.22)
Attendance		-0.05	-0.87***	0.12	-1.35***	0.35**	0.49***	-2.56***	-0.64	-0.33	0.32	0.45**
		(0.13)	(0.28)	(0.26)	(0.40)	(0.16)	(0.18)	(0.85)	(0.60)	(0.28)	(0.20)	(0.20)
Personal work		0.26	0.53	-0.96*	1.49***	-2.86***	-3.19***	-0.32	0.03	-0.70**	-1.92***	-2.34***
		(0.17)	(0.33)	(0.51)	(0.17)	(0.53)	(0.43)	(0.24)	(0.24)	(0.29)	(0.51)	(0.51)
grade huma		0.15	0.47***	-0.06	0.02	-0.17***	-0.19***	0.21*	0.06	-0.15**	0.04	-0.29***
		(0.10)	(0.18)	(0.17)	(0.08)	(0.06)	(0.07)	(0.11)	(0.11)	(0.07)	(0.10)	(0.11)
Grade lang		0.20***	0.18	-0.44***	-0.08	-0.16***	-0.08*	-0.16**	-0.09	-0.09*	-0.14*	-0.24***
		(0.07)	(0.12)	(0.12)	(0.05)	(0.04)	(0.04)	(0.07)	(0.08)	(0.05)	(0.08)	(0.07)
Grade science		-0.32***	-0.44***	-0.35***	-0.33***	-0.29***	-0.24***	-0.57***	-0.57***	-0.36***	-0.56***	-0.39***
		(0.08)	(0.10)	(0.11)	(0.07)	(0.05)	(0.05)	(0.09)	(0.08)	(0.06)	(0.09)	(0.09)
G huma*Girl		-0.05	-0.06	0.05	-0.02	-0.06	0.05	-0.14	-0.24	-0.01	-0.16	0.36**
		(0.15)	(0.23)	(0.19)	(0.11)	(0.12)	(0.12)	(0.15)	(0.14)	(0.12)	(0.14)	(0.18)
G lang*Girl		-0.17	-0.11	0.20	-0.06	-0.04	-0.10	0.04	0.08	-0.05	-0.07	-0.08
		(0.10)	(0.17)	(0.14)	(0.07)	(0.08)	(0.07)	(0.10)	(0.10)	(0.08)	(0.10)	(0.11)
G science*Girl		0.15	0.15	0.06	0.10	0.02	0.05	0.18	0.19*	0.09	0.20*	0.02
		(0.11)	(0.15)	(0.13)	(0.08)	(0.08)	(0.09)	(0.12)	(0.11)	(0.08)	(0.11)	(0.13)
Observations	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044	2044

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Coefficients of grades and grades cross gender are very similar between the two samples. Interaction variables of the grade in science with gender are a little less significant, but they are always significant with a similar amplitude. This is certainly due to the smaller size of the sample.
Regarding results with effort, we observe that students having a high attendance variable choose more a BTS (secondary or tertiary) and sport than a scientist prepa, but they choose more scientist prepa rather than literary prepa, medicine, economics and law. But we need to keep in mind that this variable is highly correlated with the type of studies: some tracks requires to attend more hours of courses than other tracks. Concerning personal work, coefficients are most of the time on the opposite sign with the attendance variable. When taking into account these two variables measuring the level of effort, gender variables remain not significant, but positive for economic prepa and medicine. In addition, grades and crossed effects remain completely identical to previous results without effort variables.

7. Conclusion

Boys and girls clearly make different educational choices and somewhat value differently their grades. However we find that the differences are less pronounced than expected. Actually, gender differences appear less on subject choices (science versus humanities for example), but more on the choice of a type of field, in secondary school as in higher education.
Indeed, a stereotype seems to affect more the choice of the General Bac versus the Technical Bac. The scientist general bac being the favourite field for all pupils on average, girls choose this Bac field in the same way than boys if they have enough good grades. But for girls who are better in Math but not enough to enroll a scientist Bac, they choose more than boys a general economic or literary Bac rather than a technical Bac, despite the fact that the choice of a scientist-oriented technical Bac would have allowed to value at best their ability in Math. In addition, a stereotype seems to affect higher-educational choices. After all type of general Bac, girls have a lower probability than boys to choose a preparatory class if they have good grades in science, but they have a higher probability than boys to choose a prepa as grades in humanities increase (this last effect is lower after a Bac L, as it is observed only when the choice of a prepa is made in comparison with "other fields"). This result support the idea that girls under-estimate their abilities in science, but over-estimate their abilities in humanities when choosing the most prestigious and higher-paid track. In other words, girls consider more than boys their talent in

humanities as a good signal they can succeed in preparatory class, while boys use more their skill in science to decide to enroll this field.

Moreover, expected earnings after each track have been introduced as alternative-specific regressors, and the stereotype remains anyway. Thus financial incentives do not seem to be appropriate to shape the stereotype. Consequently, some information campaigns directy focused on the stereotype, in schools and media for example, could play an important role in order to reduce sex segregation in education. Such an action could aim at struggling against the negative perception of girls about technical fields, and motivate girls to choose more often preparatory classes. Other types of public policies could aim at preventing girls from under-estimating their abilities in science.

Extensions, projects:

- Endogenise grades obtained at Bac more carefully, especially the grade in Sciences.
- Use different specifications of grades, for example by interacting the average grade with the gap Math-French.
- Give more structure (may help identification) by explicitly specifying the theoretical model (in progress).

A Appendix 1: Educational choices, exhaustive French national statistics, in 2009

Bac field	% of boys	Post-Bac field	% of boys
General Bac		**Preparatory classes**	
Scientist Bac	55	Eco	45
Economics Bac	39	Literary	26
Literary Bac	21	Science	70
Technical Bac		**Technical studies**	
Ingineer Bac	89	Production	75
Tertiary Bac	44	Services	36
Laboratory	44	**University**	
Health and Social	7	Law-Politics	36
		Management	48
		Humanities	32
		Sciences	72
		Biology	38
		Health	
		Health & social	18
		Medicine	20

Source of data: DEPP French Ministry of Education

B Appendix 2: Baccalauréat fields in France

General Bac	
Bac S	Scientist Bac
Bac L	Literary Bac
Bac ES	Economic Bac
Technical Bac	
Bac STI	Engineer Bac
Bac STT	Tertiary Bac
Bac STL	Laboratory Bac
Bac SMS	Health & Social Bac
Bac Pro	Professional Bac (vocational Bac)

C Appendix 3: Scientist subjects and Humanities subjects at Bac

Scientist subject	**Humanities subject**	**Foreign Language subject**
Life science and earth	French written paper	Foreign language 1
Scientist teaching (Bac L or ES)	French oral	Foreign language 2
Biochemical Technology	Economics and social sciences	
Biology	Philosophy	
Mathematics	Ancient Greek	
Physics Chemistry	History geography	
Physics Chemistry Electricity	Latin	
Engineering science	Literature	

D Appendix 4: Pupil self-evaluation of abilities at the end of College

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	math	french	lang	math	french	lang	math	french	lang
Girl	-0.19***	0.11***	-0.18***	-0.14***	0.17***	-0.13***	-0.50***	-0.39***	-0.77***
	(0.026)	(0.026)	(0.026)	(0.027)	(0.027)	(0.026)	(0.136)	(0.136)	(0.134)
Grade Math	0.37***	-0.10***	-0.12***	0.37***	-0.11***	-0.12***			
	(0.007)	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)			
Grade French	-0.09***	0.34***	0.06***	-0.10***	0.34***	0.05***			
	(0.009)	(0.010)	(0.009)	(0.009)	(0.010)	(0.009)			
Grade Lang	-0.05***	0.02***	0.31***	-0.05***	0.02***	0.31***			
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)			
G Math*Boy							0.33***	-0.11***	-0.12***
							(0.010)	(0.008)	(0.008)
G French*Boy							-0.08***	0.34***	0.05***
							(0.013)	(0.014)	(0.013)
G Lang*Boy							-0.04***	0.00	0.28***
							(0.010)	(0.010)	(0.011)
G Math*Girl							0.40***	-0.10***	-0.13***
							(0.010)	(0.008)	(0.008)
G French*Girl							-0.11***	0.35***	0.06***
							(0.013)	(0.014)	(0.012)
G Lang*Girl							-0.06***	0.03***	0.34***
							(0.010)	(0.009)	(0.011)
TV limited	-0.03	-0.04*	-0.04*	-0.02	-0.03	-0.04	-0.02	-0.03	-0.03
	(0.025)	(0.025)	(0.024)	(0.025)	(0.025)	(0.024)	(0.025)	(0.025)	(0.024)
Insuf ressources	0.02	0.01	-0.00	0.03	0.02	0.00	0.03	0.02	0.00
	(0.036)	(0.035)	(0.037)	(0.036)	(0.035)	(0.036)	(0.036)	(0.035)	(0.036)
Age entry coll	-0.10***	-0.06**	-0.15***	-0.08**	-0.04	-0.13***	-0.08***	-0.04	-0.13***
	(0.029)	(0.029)	(0.028)	(0.030)	(0.028)	(0.028)	(0.030)	(0.028)	(0.028)
Born abroad	0.15*	0.18**	0.36***	0.12	0.16*	0.34***	0.13	0.15*	0.33***
	(0.081)	(0.085)	(0.081)	(0.082)	(0.085)	(0.081)	(0.083)	(0.085)	(0.081)
Father prim edu	-0.29	-0.13	0.09	-0.28	-0.12	0.11	-0.29	-0.11	0.13
	(0.312)	(0.260)	(0.174)	(0.304)	(0.261)	(0.184)	(0.308)	(0.268)	(0.188)
Father Coll edu	-0.37	-0.13	0.09	-0.35	-0.12	0.11	-0.37	-0.11	0.12
	(0.314)	(0.262)	(0.176)	(0.307)	(0.264)	(0.186)	(0.311)	(0.270)	(0.191)
Father tech edu	-0.37	-0.16	-0.02	-0.35	-0.14	0.00	-0.36	-0.13	0.01
	(0.313)	(0.260)	(0.174)	(0.305)	(0.261)	(0.184)	(0.309)	(0.268)	(0.188)
Father lycée edu	-0.32	-0.14	0.03	-0.31	-0.14	0.03	-0.33	-0.13	0.05
	(0.314)	(0.262)	(0.177)	(0.307)	(0.264)	(0.186)	(0.311)	(0.270)	(0.191)
Father sup edu	-0.38	-0.25	-0.02	-0.37	-0.25	-0.02	-0.38	-0.24	-0.00
	(0.316)	(0.264)	(0.179)	(0.308)	(0.265)	(0.189)	(0.312)	(0.272)	(0.193)
Father sup2 edu	-0.27	-0.18	0.10	-0.31	-0.21	0.06	-0.32	-0.20	0.08
	(0.316)	(0.265)	(0.179)	(0.309)	(0.266)	(0.189)	(0.313)	(0.273)	(0.193)
Father no info	-0.31	-0.24	0.05	-0.28	-0.22	0.08	-0.29	-0.20	0.10
	(0.316)	(0.260)	(0.177)	(0.310)	(0.262)	(0.186)	(0.313)	(0.269)	(0.191)
Mother prim edu	0.07	-0.06	-0.05	0.07	-0.05	-0.04	0.07	-0.06	-0.05
	(0.089)	(0.088)	(0.088)	(0.089)	(0.088)	(0.088)	(0.090)	(0.088)	(0.089)
Mother Coll edu	0.07	-0.05	-0.11	0.08	-0.05	-0.09	0.08	-0.05	-0.09
	(0.087)	(0.088)	(0.088)	(0.087)	(0.088)	(0.088)	(0.087)	(0.088)	(0.089)
Mother tech edu	0.04	-0.08	-0.18**	0.05	-0.07	-0.16*	0.04	-0.07	-0.16*
	(0.086)	(0.087)	(0.087)	(0.086)	(0.087)	(0.087)	(0.086)	(0.087)	(0.087)

Continuation of the table (Self-evaluation)

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	math	french	lang	math	french	lang	math	french	lang
Mother lycée edu	0.09	-0.03	-0.08	0.09	-0.04	-0.08	0.09	-0.04	-0.07
	(0.089)	(0.089)	(0.090)	(0.089)	(0.090)	(0.090)	(0.089)	(0.089)	(0.090)
Mother sup edu	0.03	0.06	-0.10	0.02	0.03	-0.12	0.01	0.03	-0.11
	(0.093)	(0.093)	(0.093)	(0.093)	(0.093)	(0.093)	(0.094)	(0.093)	(0.093)
Mother sup2 edu	0.08	0.09	-0.12	0.05	0.07	-0.15	0.04	0.07	-0.14
	(0.099)	(0.100)	(0.102)	(0.100)	(0.100)	(0.102)	(0.100)	(0.100)	(0.102)
mother works	-0.01	-0.08***	-0.05*	0.00	-0.07**	-0.05	-0.00	-0.08**	-0.05
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
CS mother Indep	-0.08	0.11	0.19	-0.10	0.09	0.16	-0.10	0.10	0.16
	(0.128)	(0.132)	(0.135)	(0.130)	(0.132)	(0.134)	(0.130)	(0.132)	(0.135)
CS mother exec	-0.20	0.16	0.21	-0.24*	0.14	0.17	-0.23*	0.15	0.17
	(0.125)	(0.128)	(0.129)	(0.127)	(0.128)	(0.129)	(0.127)	(0.128)	(0.129)
CS mother interm	-0.14	0.05	0.16	-0.15	0.05	0.14	-0.14	0.05	0.14
	(0.122)	(0.125)	(0.127)	(0.124)	(0.125)	(0.126)	(0.124)	(0.125)	(0.127)
CS mother emplo	-0.16	0.12	0.16	-0.18	0.11	0.14	-0.17	0.11	0.14
	(0.118)	(0.120)	(0.123)	(0.120)	(0.120)	(0.122)	(0.120)	(0.120)	(0.122)
CS mother labor	-0.08	0.15	0.11	-0.10	0.15	0.09	-0.08	0.16	0.10
	(0.122)	(0.122)	(0.127)	(0.123)	(0.122)	(0.126)	(0.123)	(0.122)	(0.126)
CS mother inact	-0.07	0.18	0.21*	-0.09	0.15	0.17	-0.08	0.16	0.17
	(0.116)	(0.115)	(0.121)	(0.117)	(0.115)	(0.120)	(0.118)	(0.114)	(0.121)
CS mother Indep	0.40	0.08	-0.04	0.37	0.05	-0.07	0.39	0.04	-0.09
	(0.313)	(0.259)	(0.173)	(0.305)	(0.261)	(0.183)	(0.309)	(0.267)	(0.187)
CS mother exec	0.32	0.22	0.03	0.30	0.21	0.01	0.31	0.20	-0.01
	(0.313)	(0.260)	(0.174)	(0.305)	(0.262)	(0.184)	(0.309)	(0.269)	(0.188)
CS mother interm	0.37	0.22	-0.02	0.36	0.21	-0.03	0.37	0.20	-0.05
	(0.312)	(0.260)	(0.172)	(0.304)	(0.261)	(0.182)	(0.308)	(0.268)	(0.187)
CS mother emplo	0.31	0.14	-0.05	0.30	0.13	-0.06	0.31	0.12	-0.08
	(0.313)	(0.260)	(0.173)	(0.306)	(0.262)	(0.183)	(0.310)	(0.268)	(0.188)
CS mother labor	0.35	0.09	-0.04	0.33	0.08	-0.06	0.34	0.07	-0.07
	(0.310)	(0.257)	(0.170)	(0.303)	(0.258)	(0.180)	(0.307)	(0.265)	(0.184)
Mother helps regul	-0.05*	-0.05*	-0.03	-0.04	-0.05	-0.02	-0.04	-0.05*	-0.03
	(0.029)	(0.028)	(0.029)	(0.029)	(0.028)	(0.029)	(0.029)	(0.028)	(0.029)
Father helps regul	-0.02	-0.05	-0.06	-0.03	-0.05	-0.06	-0.03	-0.06	-0.06
	(0.041)	(0.040)	(0.040)	(0.042)	(0.040)	(0.041)	(0.042)	(0.040)	(0.041)
Mother never helps	-0.01	0.01	0.05	-0.02	-0.00	0.04	-0.01	0.00	0.04
	(0.042)	(0.041)	(0.042)	(0.042)	(0.041)	(0.042)	(0.042)	(0.042)	(0.042)
Father never helps	-0.03	-0.04	0.00	-0.02	-0.04	0.01	-0.02	-0.04	0.01
	(0.030)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)
repeat a year	-0.00	-0.09***	-0.01	0.03	-0.07**	0.01	0.02	-0.08**	0.00
	(0.035)	(0.033)	(0.034)	(0.035)	(0.033)	(0.034)	(0.035)	(0.033)	(0.034)
ambitious				0.31***	0.22***	0.25***	0.31***	0.22***	0.25***
				(0.031)	(0.032)	(0.030)	(0.031)	(0.032)	(0.029)
follower				0.03	-0.00	0.06**	0.03	-0.00	0.06**
				(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
decide				0.11***	0.07***	0.03	0.11***	0.07***	0.03
				(0.025)	(0.025)	(0.024)	(0.025)	(0.025)	(0.024)
talk behind				0.02	0.12***	0.07***	0.02	0.12***	0.07***
				(0.025)	(0.025)	(0.024)	(0.025)	(0.025)	(0.024)

Continuation of the table (Self-evaluation)

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	math	french	lang	math	french	lang	math	french	lang
not so content him				0.01	-0.07	-0.07	0.01	-0.08	-0.07
				(0.076)	(0.077)	(0.072)	(0.076)	(0.078)	(0.072)
quite content him				0.17**	-0.00	0.01	0.18**	-0.00	0.01
				(0.077)	(0.077)	(0.071)	(0.077)	(0.078)	(0.071)
very content him				0.35***	0.09	0.09	0.36***	0.09	0.08
				(0.089)	(0.087)	(0.082)	(0.089)	(0.087)	(0.082)
not so content appearance				0.02	0.11*	0.16***	0.02	0.10*	0.15**
				(0.062)	(0.060)	(0.059)	(0.062)	(0.060)	(0.060)
quite content app				-0.02	0.14**	0.18***	-0.03	0.12**	0.16***
				(0.061)	(0.062)	(0.060)	(0.062)	(0.062)	(0.061)
very content app				0.01	0.17**	0.20***	0.00	0.15**	0.18***
				(0.068)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Not so influenced				0.01	-0.10***	-0.05*	0.01	-0.10***	-0.05*
				(0.026)	(0.027)	(0.027)	(0.026)	(0.027)	(0.027)
quite influenced				-0.04	-0.17***	-0.03	-0.04	-0.18***	-0.03
				(0.038)	(0.037)	(0.038)	(0.038)	(0.037)	(0.038)
very influenced				-0.02	-0.22***	-0.15**	-0.03	-0.22***	-0.15**
				(0.077)	(0.077)	(0.071)	(0.077)	(0.077)	(0.072)
not so content face				0.11***	0.00	-0.00	0.11***	0.01	-0.00
				(0.028)	(0.027)	(0.027)	(0.028)	(0.027)	(0.027)
quite content face				0.04	-0.05	-0.01	0.04	-0.05	-0.01
				(0.040)	(0.039)	(0.039)	(0.040)	(0.039)	(0.039)
very content face				0.03	0.08	-0.05	0.05	0.08	-0.05
				(0.065)	(0.069)	(0.065)	(0.065)	(0.069)	(0.065)
feel not so able				-0.14	-0.05	-0.01	-0.14	-0.05	-0.01
				(0.110)	(0.107)	(0.100)	(0.110)	(0.106)	(0.099)
quite able				-0.03	-0.00	0.05	-0.03	-0.00	0.05
				(0.107)	(0.104)	(0.096)	(0.108)	(0.104)	(0.095)
very able				0.03	0.07	0.09	0.04	0.07	0.09
				(0.108)	(0.105)	(0.097)	(0.109)	(0.105)	(0.096)
Observations	9,294	9,294	9,294	9,294	9,294	9,294	9,294	9,294	9,294

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

E Appendix 5: Bac choices

	General Bac			Technical Bac				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	S-REF	**L**	**ES**	**STI**	**STT**	**STL**	**SMS**	**Pro**
Expected wage	0.0039*** (2.70)							
Girl		0.60	0.47	-5.45***	0.20	-0.23	3.00*	0.17
		(0.947)	(0.632)	(1.404)	(0.696)	(1.516)	(1.677)	(0.793)
Average grade		-0.21***	-0.26***	-0.64***	-0.64***	-0.67***	-0.65***	-1.01***
		(0.055)	(0.031)	(0.035)	(0.039)	(0.089)	(0.132)	(0.042)
Average G*Girl		-0.03	-0.05	0.22**	-0.02	-0.05	-0.09	-0.08
		(0.062)	(0.040)	(0.110)	(0.049)	(0.122)	(0.140)	(0.057)
Gap Math-French		-0.65***	-0.32***	-0.03	-0.24***	-0.24***	-0.31**	-0.18***
		(0.045)	(0.029)	(0.027)	(0.031)	(0.077)	(0.129)	(0.029)
Gap M-F*Girl		0.04	0.02	-0.22***	-0.09**	0.18*	0.03	-0.11***
		(0.053)	(0.037)	(0.085)	(0.042)	(0.097)	(0.135)	(0.041)
Age entry college		0.37***	0.34***	0.49***	0.50***	0.46**	0.95***	1.16***
		(0.114)	(0.088)	(0.123)	(0.102)	(0.224)	(0.168)	(0.102)
Born abroad		0.22	-0.17	-0.48	-0.16	-0.36	-0.59	-0.59**
		(0.268)	(0.251)	(0.409)	(0.280)	(0.755)	(0.547)	(0.276)
Father primaire educ		-0.06	0.23	0.30	0.42**	0.22	-0.05	0.35**
		(0.198)	(0.172)	(0.229)	(0.180)	(0.411)	(0.299)	(0.174)
Father Coll educ		-0.12	0.39**	0.08	0.32*	0.04	0.03	0.10
		(0.183)	(0.154)	(0.229)	(0.175)	(0.435)	(0.298)	(0.174)
Father tech educ		-0.44***	0.08	0.47***	0.24*	0.35	0.13	0.30**
		(0.141)	(0.122)	(0.172)	(0.137)	(0.321)	(0.221)	(0.133)
Father lycée educ		-0.54***	-0.10	-0.16	-0.19	-0.39	-0.60*	-0.57***
		(0.162)	(0.135)	(0.202)	(0.163)	(0.416)	(0.309)	(0.168)
Father sup educ		-0.67***	-0.14	-0.03	-0.31*	-0.18	-0.97**	-1.02***
		(0.180)	(0.144)	(0.224)	(0.186)	(0.468)	(0.419)	(0.209)
Father sup2 educ		-0.83***	-0.38***	-1.28***	-1.20***	-1.14**	-1.22***	-2.49***
		(0.164)	(0.136)	(0.249)	(0.206)	(0.451)	(0.382)	(0.249)
Father no info educ		-0.32	0.21	0.49	0.12	-0.06	-1.17	-0.07
		(0.353)	(0.290)	(0.372)	(0.324)	(0.788)	(0.780)	(0.301)
Mother primaire educ		-0.11	0.36	-0.11	0.37*	0.50	0.04	0.12
		(0.258)	(0.240)	(0.273)	(0.217)	(0.506)	(0.398)	(0.212)
Mother Coll educ		-0.02	0.34	0.16	0.20	-0.02	0.07	0.10
		(0.240)	(0.228)	(0.251)	(0.206)	(0.499)	(0.383)	(0.201)
Mother tech educ		-0.03	0.49**	0.22	0.12	0.02	0.36	-0.11
		(0.228)	(0.220)	(0.236)	(0.197)	(0.474)	(0.361)	(0.192)
Mother lycée educ		-0.21	0.30	-0.13	-0.40*	-0.10	-0.48	-0.85***
		(0.234)	(0.220)	(0.245)	(0.207)	(0.482)	(0.397)	(0.206)
Mother sup educ		-0.27	0.01	-1.05***	-0.95***	-0.93*	-0.62	-1.41***
		(0.236)	(0.223)	(0.269)	(0.219)	(0.559)	(0.414)	(0.224)
Mother sup2 edu		0.07	0.19	-0.79***	-1.49***	-0.58	-1.07**	-1.47***
		(0.249)	(0.232)	(0.303)	(0.296)	(0.557)	(0.539)	(0.294)
not so content abt him		0.06	0.18	0.75*	0.35	0.20	-0.07	0.38
		(0.228)	(0.200)	(0.395)	(0.241)	(0.560)	(0.346)	(0.247)
quite content abt him		0.12	0.26	1.12***	0.69***	0.49	0.07	0.95***
		(0.237)	(0.207)	(0.392)	(0.249)	(0.580)	(0.363)	(0.253)

Continuation of the table

	General Bac			Technical Bac				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	S-REF	**L**	**ES**	**STI**	**STT**	**STL**	**SMS**	**Pro**
very content abt him		0.10	0.27	1.07**	0.62**	-0.05	0.46	1.22***
		(0.288)	(0.243)	(0.417)	(0.285)	(0.720)	(0.439)	(0.283)
feel not really able		0.41	0.08	-0.45	0.09	-0.77	0.42	0.14
		(0.333)	(0.295)	(0.415)	(0.320)	(0.645)	(0.522)	(0.319)
quite able		0.13	0.28	-0.73*	-0.02	-0.51	0.52	0.12
		(0.328)	(0.287)	(0.395)	(0.311)	(0.612)	(0.507)	(0.310)
very able		0.38	0.44	-0.59	0.26	-0.09	0.90*	0.27
		(0.333)	(0.292)	(0.397)	(0.315)	(0.623)	(0.513)	(0.313)
Not so influenced		-0.04	0.09	0.18	0.14	0.12	0.03	0.06
		(0.095)	(0.077)	(0.112)	(0.092)	(0.234)	(0.172)	(0.092)
quite influenced		-0.05	-0.01	0.02	0.14	0.21	0.08	0.10
		(0.142)	(0.114)	(0.163)	(0.133)	(0.301)	(0.234)	(0.134)
very influenced		-0.31	-0.06	0.17	-0.02	0.58	0.49	0.42*
		(0.293)	(0.225)	(0.315)	(0.256)	(0.473)	(0.376)	(0.244)
repeat a year		0.65***	0.37**	0.85***	1.39***	0.72***	1.41***	1.64***
		(0.169)	(0.153)	(0.159)	(0.141)	(0.277)	(0.204)	(0.141)
Mother helps regul		0.21**	0.14*	-0.08	0.25**	0.25	0.28	0.28***
		(0.108)	(0.086)	(0.119)	(0.101)	(0.239)	(0.175)	(0.100)
Father helps regul		-0.13	0.05	0.19	-0.14	-0.12	0.07	-0.05
		(0.155)	(0.118)	(0.159)	(0.144)	(0.351)	(0.247)	(0.142)
Constant		-1.27	-0.43	3.45*	2.76*	1.90	-6.15**	-0.08
		(1.719)	(1.299)	(1.823)	(1.548)	(3.004)	(2.784)	(1.578)
Observations	9365	9365	9365	9365	9365	9365	9365	9365

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

F Appendix 6: Post-Bac choices, conditional to a Bac S

Table 13: **Post-Bac choices, conditional to a Bac S**

	Prepa classes			**Health**		**Short Technical**		**University**				
	Science REF	Eco	Literature	Health & social	Medicine, Pharma	Secondary	Tertiary	Eco, Law	Humanities	Science	Biology	Sport
Expected wage	0.0016***											
Girl		3.02**	0.20	-0.17	2.10*	0.98	0.55	0.35	0.93	-0.13	1.82	-1.06
		(1.50)	(3.26)	(1.58)	(1.08)	(1.18)	(1.24)	(1.56)	(1.39)	(1.28)	(1.40)	(1.95)
Grade Huma		0.24**	0.43***	-0.09	0.06	-0.18***	-0.22***	0.18*	0.06	-0.17***	-0.00	-0.26***
		(0.10)	(0.16)	(0.14)	(0.07)	(0.06)	(0.06)	(0.10)	(0.10)	(0.06)	(0.09)	(0.09)
Grade Lang		0.20***	0.13	-0.36***	-0.10**	-0.14***	-0.05	-0.14**	-0.10	-0.09**	-0.10	-0.20***
		(0.08)	(0.11)	(0.10)	(0.05)	(0.04)	(0.04)	(0.07)	(0.07)	(0.04)	(0.07)	(0.06)
Grade Science		-0.32***	-0.46***	-0.40***	-0.30***	-0.33***	-0.23***	-0.53***	-0.51***	-0.35***	-0.53***	-0.40***
		(0.07)	(0.10)	(0.09)	(0.05)	(0.04)	(0.05)	(0.08)	(0.07)	(0.05)	(0.07)	(0.08)
G Huma*Girl		-0.14	-0.04	-0.01	-0.08	-0.12	0.01	-0.19	-0.25*	-0.05	-0.22*	0.23
		(0.15)	(0.22)	(0.17)	(0.10)	(0.10)	(0.11)	(0.14)	(0.13)	(0.10)	(0.12)	(0.15)
G Lang*Girl		-0.21**	-0.07	0.07	-0.02	-0.08	-0.13**	0.03	0.08	-0.08	-0.08	-0.15
		(0.11)	(0.15)	(0.12)	(0.07)	(0.08)	(0.07)	(0.09)	(0.09)	(0.07)	(0.09)	(0.10)
G Science*Girl		0.18*	0.13	0.13	0.07	0.06	0.07	0.17*	0.12	0.10	0.17*	-0.02
		(0.10)	(0.15)	(0.11)	(0.07)	(0.07)	(0.08)	(0.10)	(0.10)	(0.07)	(0.09)	(0.12)
age entry		0.03	0.75*	0.31	0.18	0.53***	0.54**	0.35	0.12	0.06	-0.08	0.53
		(0.30)	(0.43)	(0.28)	(0.20)	(0.21)	(0.21)	(0.28)	(0.28)	(0.20)	(0.26)	(0.42)
Repeat a year		-13.31***	2.44**	2.28***	1.91***	1.44**	2.23***	1.58*	1.76**	1.42**	1.45*	1.99***
		(0.67)	(1.18)	(0.72)	(0.65)	(0.60)	(0.62)	(0.82)	(0.77)	(0.66)	(0.77)	(0.72)
born abroad		0.82	0.20	-14.76***	0.61	-0.48	-0.21	0.09	0.63	0.31	-0.30	0.33
		(0.65)	(1.12)	(0.47)	(0.46)	(0.64)	(0.61)	(0.68)	(0.62)	(0.56)	(0.80)	(0.88)
Father prim ed		-0.90	1.30	0.41	0.61	0.06	0.48	0.56	0.36	0.42	-0.12	0.66
		(1.18)	(1.24)	(0.60)	(0.47)	(0.49)	(0.49)	(0.59)	(0.59)	(0.50)	(0.61)	(0.92)
Father Coll ed		-1.98*	-14.63***	0.33	-0.19	-0.22	-0.16	-0.35	0.24	-0.15	-0.20	1.08
		(1.12)	(0.67)	(0.52)	(0.43)	(0.40)	(0.42)	(0.51)	(0.50)	(0.43)	(0.48)	(0.77)
Father tech ed		-1.38**	0.06	-0.27	-0.29	-0.40	-0.54	-1.51***	-0.26	-0.43	-0.44	1.06*
		(0.59)	(0.79)	(0.43)	(0.33)	(0.31)	(0.34)	(0.45)	(0.40)	(0.34)	(0.37)	(0.63)
Father lycée ed		-0.88	0.42	-0.66	-0.54	-0.88***	-0.86**	-0.75*	-0.47	-0.44	-0.72*	0.66
		(0.53)	(0.71)	(0.46)	(0.33)	(0.32)	(0.35)	(0.40)	(0.42)	(0.35)	(0.38)	(0.66)
Father sup ed		-1.26**	-0.12	-0.83*	-0.45	-1.01***	-0.69**	-0.83**	-0.51	-0.96***	-1.41***	0.37
		(0.56)	(0.74)	(0.47)	(0.33)	(0.33)	(0.35)	(0.41)	(0.42)	(0.37)	(0.43)	(0.71)
Father sup2 ed		-0.26	-0.29	-1.49***	-0.46	-1.79***	-1.29***	-0.92**	-1.16***	-0.85***	-1.73***	-0.35
		(0.43)	(0.66)	(0.50)	(0.30)	(0.31)	(0.34)	(0.37)	(0.39)	(0.33)	(0.40)	(0.69)
Father no info		0.81	-14.81***	0.46	0.20	-1.20	-0.94	0.70	-0.07	-0.20	-15.07***	1.14
		(1.03)	(0.91)	(0.96)	(0.81)	(0.89)	(0.97)	(0.84)	(1.08)	(0.87)	(0.73)	(1.13)
Mother prim ed		-14.81***	-14.72***	-0.06	0.04	-0.08	-0.18	0.28	0.49	-0.19	0.11	0.40
		(0.84)	(0.99)	(0.68)	(0.55)	(0.55)	(0.60)	(0.82)	(0.83)	(0.59)	(0.75)	(0.78)
Mother Coll ed		0.58	-1.70	-0.06	-0.64	-0.02	0.10	0.78	0.45	-0.10	0.15	-0.88
		(0.85)	(1.31)	(0.62)	(0.51)	(0.47)	(0.53)	(0.72)	(0.78)	(0.52)	(0.68)	(0.83)
Mother tech ed		0.27	-0.94	-0.54	-0.18	0.07	0.10	0.39	0.40	-0.57	-0.12	-0.31
		(0.82)	(1.04)	(0.60)	(0.47)	(0.44)	(0.50)	(0.69)	(0.75)	(0.50)	(0.66)	(0.72)
Mother lycée ed		-0.21	-0.28	0.01	-0.21	0.18	0.22	0.42	0.39	-0.50	0.32	0.12
		(0.80)	(0.93)	(0.59)	(0.46)	(0.42)	(0.49)	(0.68)	(0.75)	(0.49)	(0.64)	(0.70)
Mother sup ed		0.49	-0.09	-0.72	-0.51	-0.24	-0.26	0.62	0.32	-0.61	-0.11	-0.50
		(0.76)	(0.97)	(0.60)	(0.46)	(0.42)	(0.49)	(0.67)	(0.74)	(0.48)	(0.64)	(0.73)
Mother sup2 ed		0.07	-0.03	-1.48**	-0.29	-0.78*	-1.22**	0.63	0.78	-0.97*	-0.01	-0.88
		(0.77)	(1.02)	(0.74)	(0.46)	(0.45)	(0.53)	(0.68)	(0.74)	(0.50)	(0.67)	(0.79)
Constant		-3.69	-11.37**	5.73	1.17	3.97	1.57	1.66	5.44	8.21***	8.94***	3.48
		(3.55)	(5.18)	(3.55)	(2.51)	(2.64)	(2.63)	(3.53)	(3.53)	(2.53)	(3.35)	(5.07)
Observations	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308	2308

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

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H Database

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