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Social Inequalities of Post-secondary Educational Aspirations: influence of social background, school composition and institutional context

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ABSTRACT The first goal of this article is to assess, for each country belonging to the Organisation for Economic Co-operation and Development (OECD), the influence of pupils' sociocultural background on educational aspirations. The second goal is to explore whether, after controlling for educational achievement, the residual influence of sociocultural background is still significant. In addition, the authors estimate whether the sociocultural and academic characteristics of school composition have an additional impact on educational aspirations in this group of countries. Finally, they show that the structural characteristics of school systems moderate the influence of individual characteristics and school composition on educational aspirations.

Introduction

Access to higher education is at the heart of educational issues in most of the world's countries. This issue is often analysed in terms of volume of access to this level of instruction. But it can also be put in terms of social inequalities in access to higher education. By analysing the educational aspirations expressed by 15-year-old students, the following article will concentrate on this latter question.

In this text, we shall pay particular attention to the social factors affecting the educational aspirations expressed by secondary school students. The influence of social factors on the construction of educational aspirations has of course been highlighted in sociological and educational studies that inspire the major part of this article, but it is also present in psychological research, which has drawn attention to the important role played by family environment and school context in the aspirations expressed by young people. In this research, the influence of social factors on the construction of educational aspirations will be analysed at three different levels, corresponding to the three aims of this article. The first level concerns the influence of family sociocultural background on educational aspirations. The second level concerns the influence of school environment and, in particular, the school composition effect. Finally, variations between countries concerning the social background and school composition effects will be related to the

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structural characteristics of educational systems and, in particular, the use of different tracks in lower-secondary education.

After briefly reviewing the relevant literature, we will present our methodology and the database (the Program for International Student Assessment [PISA] 2003) upon which we tested our hypotheses in 28 member countries of the Organisation for Economic Co-operation and Development (OECD). The results of this research will then be presented and discussed.

State of the Art

Influence of Social and Cultural Background

The empirical relationship between the social background of secondary education students and their educational and professional aspirations has over the years been extensively documented. This line of research has in fact revealed how complex and evolving the relations intertwining social background, educational careers and educational aspirations are. Guidance psychologists, in particular, have shown that the influence of social background on aspirations increases during adolescence, a time when the expression of educational and professional aspirations breaks free from idealist considerations and gradually takes on a more pragmatic cast. Moreover, the sociology of education has drawn attention to a complex system of variables that must be fully taken into account if one wishes to adequately grasp the influence of social background on educational aspirations and/or academic performance. Indeed, as their school careers progress, students tend to increasingly differentiate themselves in terms of their educational careers and academic skills. These variables, which are themselves influenced by the student's social background, gradually become the best predictors of his or her subsequent academic career and educational aspirations. Moreover, at advanced stages of education – at university, for example – these academic variables can become so influential that they even potentially hide the influence of social background. The configuration of relationships between social background, educational and/or professional aspirations and academic performance thus seems to evolve with students' age and the various stages of the educational system. We will shortly describe this complex system of relations, first examining the studies of guidance psychologists and then those of educational sociologists.

Dumora (1998, 2004) examined the evolution of the relationship between professional aspirations and the parents' occupational status for young French students at intervals of a few years. She observed that the professional intentions expressed by 11-12-year-olds for the most part concerned relatively prestigious professions (veterinarian, teacher, doctor, actor, nurse, etc.). Such choices are largely independent of parental occupation and seem emblematic of a young teenage culture characterised by a very idealised and disincarnated relationship to one's future occupation. In regards to this age group, Dumora (2004) speaks of an occupational fiction congruent with a myth of open access to all occupations. It is only later that adolescents move from the myth to the norm, gradually incorporating into their reasoning objective data regarding their academic career and performance. They thus shift from the space of the possible to the space of the probable (Dumora, 1990, in reference to Bourdieu, 1974) as the subjective hopes of young people adjust to the objective probabilities of success. At this moment, students' educational and professional aspirations become differentiated according to both their academic results and the cultural capital of their families (in particular, the diplomas held by their parents). In their comparative study of the educational aspirations expressed by 13-14-year-olds in 12 different countries [1], Buchman and Dalton (2002) show the influence of sociocultural factors at this age: in all countries studied, educational aspirations are statistically associated ($p < 0.01$) with the diploma held by their parents, even if important differences exist between countries (this relationship is stronger in Germany and weaker in the United States, for instance). It thus seems that, when becoming a teenager, there is indeed a shift towards a more 'probabilistic' perspective in which social background becomes more influential in terms of educational (and vocational) aspirations.

Several routes are available to the researcher who seeks to understand the inequalities of social aspirations that seem to emerge at this age (13-14 years old). On the one hand, the researcher can concentrate on (raw) inequalities of aspirations between social groups and in this way show differences in expressed aspirations which vary according to parents' cultural capital (most often, the highest diploma received by the parents is taken into consideration as evidence of cultural

capital) or economic capital (income, for example). But another way is to assess the social inequalities that remain after taking differences in academic performance between students into consideration. This type of analysis has been conducted in some educational systems (see, among others, Sewell & Hauser, 1975 for the United States; Jonsson & Erikson, 2000 for Sweden; and Duru-Bellat, 2002 for France) and reflects what sociologists generally describe as a social self-selection process, corresponding to observed differences in aspirations (or in educational choices) which are not explained (or not fully explained) by differences in academic performances among students.

In short, a statistically significant relationship is usually observed between family social background and the educational aspirations of young people. Where the phenomenon has been studied, it seems that the influence of the cultural capital of families has a twofold effect. An indirect effect corresponds to the influence of cultural capital on school career, which in turn has a strong impact on educational aspirations. The direct effect corresponds to the residual influence of cultural capital on educational aspirations after controlling for students' abilities. This direct effect will be called in this article 'social self-selection'.

Moreover, it should also be emphasised that most of the empirical research that has analysed the empirical relationship between the social background of upper-secondary students and their educational aspirations also deals with differences of aspirations in terms of gender. In the vast majority of current studies referring to higher or university-level education, girls have higher aspirations than boys (Sikora & Pokropek, 2011).

Influence of School Composition

In addition to the influence of individual sociocultural characteristics, this research seeks to understand the influence of school environment. Some of the research today carried out in the domain of educational aspirations takes such an influence into consideration. However, the diversity of indicators called upon as well as the diversity of interpretations proposed by this research are worth noting. The influence of peer groups, in particular, has been studied.

Psychologists usually refer to psychosocial processes of identification and comparison among peers, especially regarding their academic level. The theory of social comparison is often drawn upon (Marsh, 1991; Dijkstra et al, 2008; Marsh & O'Mara, 2010) to explain processes of intra-group comparison and their influence on the self-concept, and in particular on academic self-concept.

The most famous reference here is the Big Fish Little Pond Effect (BFLPE). This model suggests that, all things being equal, belonging to a high-performing classroom or school most often has a negative influence on student academic self-concept. Marsh and others explain this paradoxical finding by a process of comparison that takes place between the students of the same class or school ('the better my classmates perform, the lower the perception of my academic value'). Conversely, attending a low-performing group leads, all things being equal, to a more positive individual self-concept. If most of the studies concerning BFLPE took into account the group influence on academic self-concept, some researchers have considered the class or school average ability influence on educational aspirations. In that respect, Marsh (1991) and Marsh and O'Mara (2010) observe (in both cases with data referring to US high school students) a negative effect of the school average ability on educational aspirations. Moreover, Nagengast and Marsh (2012), using the PISA 2006 database, found that career aspirations in science were negatively related to school-average achievement in 31 out of 57 countries.

In sociology, the main interest has concerned the influence of peers' sociocultural level (Meyer, 1970; Law, 1981; Thrupp, 1999; Frost, 2007) on students' aspirations. Such empirical analyses usually show that, all things being equal, educational aspirations are on average higher when students attend a school where the average sociocultural intake is also higher. The hypothesis is that informal contact with students from more privileged sociocultural backgrounds has a positive impact on the way students view schooling. Young people are then more inclined to choose long-lasting and often more prestigious studies after secondary education.

In his theory of community interactions, Bill Law (1981) explored how close friends may influence individual self-image and, simultaneously, the representation one constructs of one's academic or occupational future. In fact, Law considers that these interactions take place in

different spaces, such as the family, the school and other circles of socialisation. In the argument developed here, however, we will be drawing upon this theory, in particular, to consider the influence of students' classmates and school. These sources of influence are the expectations, feedback and support of one's circle, processes of modelling (the models with which one may identify) and sources of information. Each of these sources no doubt helps us understand why, at an age where adolescents seek to specify what they wish to do with their life, the group exercises an influence on them. However, the last two processes – modelling and sources of information – are probably the most relevant parameters for understanding group influence on the development of aspirations. Indeed, we can hypothesise that a major difference between a student who attends a 'privileged' school and a student who attends an 'under-privileged' school lies in the information and social networks available to each of them when they have to choose whether to go on to higher education, and if so, which kind of studies. Similarly, the 'priveleged' school student benefits from more occupational models (via contact with other students' parents, in particular) if he or she encounters a large diversity of social backgrounds at his/her school.

There is also a vast literature about peers' influence on academic performance (not on educational aspirations). This field of research shows the importance of distinguishing between effects of composition and peer-group effects. Strictly speaking, the peer-group effect reflects the specific influence, all things being equal, of other students in the class or at school. The experimental studies show that, on average, where the conditions of instruction are kept identical, peers' influence on student performance is either not significant (Slavin, 1987, 1990) or extremely limited.

The effect of composition (Thrupp et al, 2002; Dumay & Dupriez, 2008) is a concept used in correlational studies conducted in a natural setting. In a natural setting, educational conditions are never identical. The school or class composition variables simultaneously convey two types of information: on the one hand, information about the peers themselves and the influence that they may directly have on a given student; and on the other hand, information about the educational environment, which we know covaries (in terms of curriculum, climate, length of training, teacher characteristics, etc.) with student characteristics. The composition effect is thus larger than the peer effect and can have a stronger impact on students; indeed, it takes into account not only the direct influence of peers, but also the indirect influence of educational practices, which covary with peer characteristics.

In the empirical study presented here, we will generally use the term 'composition effect' or 'school environment effect' to draw the reader's attention to the fact that peers' average variables may be a surrogate of other factors.

Impact of the Institutional Context

To our knowledge, few studies about educational and/or professional aspirations have made large-scale comparisons between countries or educational systems. Buchmann and Dalton (2002) conducted research on the basis of a secondary analysis of the 1995 TIMSS (Third International Mathematics and Science Study) database and examined representative samples of 13-year-old students in 12 OECD countries. In particular, the authors address the relationship between the structure of the educational system (early tracked system in lower-secondary education versus comprehensive system) and the influence of the (perceived) opinion of each student's friends on his or her educational aspirations. They found that the opinion of one's friends only exerts an influence over educational aspirations in some countries, particularly those characterised by a non-differentiated educational structure (namely, the USA, Norway, Spain, Hong Kong, Korea and Thailand). They interpreted this by suggesting that, in differentiated education systems (Germany, for example), student classification has already taken place and aspirations are for the most part influenced by the track attended, and not by friends' opinion. Buchman and Park (2009) conducted a secondary analysis of the PISA 2003 database in order to analyse how highly differentiated educational systems perpetuate educational and occupational inequalities. They showed how, within such school systems (Austria, Czech Republic, Germany, Hungary and the Netherlands), (1) students' socioeconomic status (SES) is highly predictive of the types of schools and tracks they attend, and (2) the types of schools and tracks attended have a strong impact on educational and

occupational aspirations, after controlling for mathematics achievement and parents' occupation. They also demonstrate that the magnitude of SES effect on educational expectations is higher in highly differentiated educational systems than in countries with undifferentiated systems (here, they take into account data from Australia, Canada, New Zealand, Spain and the United States).

While the influence of school composition on educational aspirations and social inequalities therein has been the object of little systematic international comparison, it is worth mentioning that a large number of international comparisons have by contrast studied the relationship between the structure of educational systems and social inequalities in school performance. The results of these studies are congruent (see Gorard & Smith, 2004; Hanushek & Woessmann, 2006; Mons, 2007; Dupriez et al, 2008; Monseur & Crahay, 2008), and there is a broad consensus among researchers. School systems with early tracking (characterised by significant differences of composition between schools, as in Germany, Austria, Belgium, Hungary, Switzerland and the Czech Republic) increase differences in performances between students and are, moreover, less equitable. The social inequalities of performance measured towards the end of compulsory education are consequently greater in such educational systems. The above-mentioned Buchman and Park research (2009) suggests, after comparing two groups of five countries, that similar processes can be observed as far as educational expectations are concerned. Taking into account 28 OECD member countries, the present research project will examine whether such differences in the structure of educational systems have an influence on social inequalities in aspirations, and will also examine the impact of the school composition on educational aspirations.

Research Questions and Methodology

This study is focused on the analysis of educational aspirations and, in particular, on what we will describe as 'university-level' educational aspirations (more precisely, Levels 5A and 6 of the International Standard Classification for Education [ISCED]).[2]

Our research questions focus on three main themes:

- What is the relationship between student's sociocultural background and aspirations to study at the 'university' level? What is the same relationship after controlling for student's academic performances?
- To what extent is school composition related to student's educational aspirations after controlling for student's social background and academic performance?
- To what extent can the institutional structure of the educational systems under investigation explain variations among countries relative to questions (1) and (2)?

Our principal dependent variable is then dichotomous: do the students intend to pursue studies at university after secondary education? In addition, as the perimeter and status of higher education instruction vary from one country to another, a similarly dichotomous, complementary dependent variable is used in some of our models: do the students intend to pursue post-secondary studies (Levels 5A, 5B and 6 of the international ISCED classification), including non-theoretically based programmes?

Data

This research was conducted using the PISA 2003 database. PISA 2003 data were used because the students' questionnaire included a question about educational aspirations; this variable was not included as a core question in the PISA studies that followed. The analyses were carried out for all OECD countries, with the exception of Mexico and Turkey. These two countries were not selected because, in contrast to all other OECD countries, a significant proportion of 15-year-olds (46% in Turkey and 42% in Mexico) were no longer in school at this age.

Variables

Two dependent variables are used in this research: (i) the dichotomy, 'aspiring to pursue (or not) studies at Levels 5A and 6 of the international ISCED classification' (what we will describe as 'university-level' studies); and (ii) the dichotomy, 'aspiring to pursue (or not) advanced studies'

(Levels 5A, 5B and 6 of the international ISCED classification). Thus, the second variable contains all the opportunities to pursue higher education (or not) while the first dichotomy applies only to certain types of higher education, generally considered the most prestigious. Four independent variables have been selected: (i) the student's gender; (ii) the ESCS [3] index, a composite index of the social, economic and cultural background of the student; (iii) the student's performance in mathematics (PV1MATH); and (iv) the student's performance in reading (PV1READ).[4] The three continuous variables (i.e. ESCS, PV1MATH and PV1READ) were standardised at the international level, with each country contributing equally.[5] Any records with at least one missing piece of information on the selected variables were removed from the database. On average, 2.71% of observations were deleted, ranging from a minimum of 0.11% for Poland to a maximum of 10.37% for Canada. After deleting missing data, the sample size was of 184,081 students, with at least 3315 students (this number refers to Iceland) per country.

Furthermore, the average scores of the ESCS and PV1Math variables were calculated by school and will be used in models testing the influence of school composition. For analyses centred on countries (the third objective), according to prior literature showing the impact of early tracking and segregation on inequalities, we will use four variables describing the degree of differentiation within educational systems and observe their relationships to the per-country results of research questions 1 and 2. These variables are (i) the age of the first orientation; (ii) the percentage of 15-year-old students who are no longer in academic education; (iii) the percentage of between-school variance of student performance in mathematics (ICC math); and, finally, (iv) the percentage of between-school variance in the sociocultural level of students (ICC ESCS).

All the analyses were carried out by weighting the data in accordance with the methodology recommended by PISA. The standard errors of logistic models were estimated by drawing upon the re-sampling methods adopted by PISA (Fay method). By contrast, in the case of hierarchical models, the standard errors computed by SAS (Statistical Analysis Software) were used. Due to the stratification variables employed by the various countries, the standard errors proposed by SAS in hierarchical models may be slightly overestimated.

Results

Social Inequalities in Educational Aspirations

First of all, analyses were performed to estimate the relationship between student sociocultural background (ESCS), gender and 'university-level' educational aspirations in 28 countries of the database (Table I). In order to get results for each individual country, a first logistic regression model was run by country. The results show that sociocultural background is related to 'university-level' educational aspirations in each of the 28 countries; the odds ratios of the ESCS variable are all significant. Furthermore, all the odds ratios are above 1; that is, in the 28 countries, the more privileged a young person's social background, the more he or she is likely to aspire to university-level studies. For example, in Hungary, after controlling for gender, a change of one standard deviation on the (standardised) scale of the socio-economic and cultural index is associated with a 4.7 times greater chance of aspiring to go to university. In Table I, countries are ranked in descending order; it is, then, in Hungary, Slovakia and the Czech Republic that social inequalities in educational aspirations are the strongest. As shown by Table I, Finland, Portugal and New Zealand are the three countries in which social inequalities in university-level educational aspirations are the least pronounced.

If one examines differences between boys and girls relative to their intent to pursue 'university-level' studies, one observes that there is a statistically significant difference in most countries. Where this difference is observed, it is always to the advantage of girls, except in Japan. In Austria, Korea, Luxembourg, New Zealand and Switzerland, the difference between girls and boys is not significant.

In so far as Levels 5A and 6 of the ISCED international classification do not have exactly the same meaning from one country to another, the same model was performed taking into consideration aspirations to pursue higher education of whatever type (Level 5A, 5B and 6 of the ISCED international classification), as compared with the absence of such aspirations. We have observed that, while the ranking of countries changes somewhat, the conclusion is similar: in each

country concerned, sociocultural background is significantly linked to higher educational aspirations. Moreover, the correlation between the odds ratios obtained for the ESCS variable for each of the two analyses ($r = .83$) shows that these two phenomena are closely linked.

Country	ESCS[1]	Gender[2]	Country	ESCS	Gender
Hungary	4.684***	2.62***	Spain	2.511***	2.20***
Slovakia	3.828***	1.83***	Australia	2.484***	1.89***
Czech Republic	3.627***	1.83***	Italy	2.473***	2.51***
Switzerland	3.588***	1.07	The Netherlands	2.458***	1.30**
Poland	3.409***	2.26***	Iceland	2.403***	1.82***
Japan	3.397***	0.69**	France	2.384***	1.73***
Austria	3.390***	1.10	Ireland	2.367***	2.15***
Belgium	3.039***	1.40***	Denmark	2.358***	1.18*
Germany	3.038***	1.25*	USA	2.305***	1.29***
Greece	2.934***	1.54***	Sweden	2.247***	1.58***
Norway	2.869***	1.54***	Luxembourg	2.205***	1.08
Korea	2.738***	0.97	New Zealand	2.083***	1.14
United Kingdom	2.518***	1.52***	Portugal	2.035***	2.58***
Canada	2.515***	1.82***	Finland	2.006***	1.16**

*Odds ratio significant at .05; **significant at .01; ***significant at .001.

[1]Change per one standard deviation of the index; [2] The reference category is Boy.

Table I. Impact of gender and SES on 'university-level' educational aspirations (odds ratio)

Next, the relationship between students' sociocultural background and higher educational aspirations was estimated, keeping under control the level of student academic performance (the PISA mathematics and reading scores) in order to determine whether a process of social self-selection was at work and, if so, on what scale. We thus added the 'Student performance in Mathematics' and the 'Student performance in Reading Comprehension' variables to our initial model (Table II).

As shown in Table II, scores in mathematics and reading literacy are significantly linked to 'university-level' educational aspirations in the vast majority of countries. In Finland and Canada only the mathematics score, and in the United States only the reading literacy score, is significantly associated with the intent expressed by students to pursue 'university-level' studies. In the vast majority of countries, the influence of the mathematics score is stronger than that of the reading comprehension score. And the relationship goes systematically in the same direction: the higher a young person's performance, whether in reading or mathematics, the more likely it is that he or she will wish to pursue 'university-level' studies.

However, the most important finding concerns the influence of sociocultural background after having controlled for the level of student performance in PISA. In the 28 countries concerned, the odds ratios linked to the ESCS variable remain significant after such a control. We can thus conclude that 'university-level' educational aspirations among 15-year-olds are, in all countries studied, influenced by social self-selection: with equal performance in PISA, young people from underprivileged backgrounds have less elevated aspirations than those of their more privileged peers.

Yet this self-selection does not have the same magnitude in all countries. Indeed, according to PISA data, it is in Hungary, Switzerland and Japan that this self-selection is strongest. Conversely, in the Netherlands, Portugal and New Zealand, self-selection is less pronounced.

As for the previous step, the same analyses were replicated using the level of higher education aspirations as dependent variable. Here again, the impact of the ESCS variable on aspirations to pursue post-secondary studies is quite similar, and the correlation between the odds ratios obtained for both kinds of educational aspirations is closely related ($r = 0.826$). Considering the high level of correlation between our two dependent variables, the next analyses will be made only for aspirations to pursue 'university-level' studies.

Country	ESCS	Gender	Mathematics	Reading
Hungary	2.963***	2.91***	2.720***	1.639***
Switzerland	2.666***	1.18	2.150***	1.349***
Japan	2.637***	0.68**	2.381***	1.286***
Poland	2.555***	2.41***	2.065***	1.293***
Czech Republic	2.512***	2.04***	2.595***	1.578***
Slovakia	2.489***	1.98***	2.525***	1.913***
Austria	2.468***	1.15	2.161***	1.359***
Norway	2.313***	1.41***	1.372***	1.362***
Greece	2.271***	2.60***	2.893***	1.547***
Germany	2.131***	1.21	1.977***	1.518***
Canada	2.109***	2.00***	1.897***	1.09
Belgium	2.102***	1.45***	2.012***	1.425***
Korea	2.097***	1.00	2.160***	1.626***
Iceland	2.091***	1.47***	1.678***	1.404***
Italy	2.079***	2.30***	1.240***	1.508***
Spain	1.970***	2.17***	2.231***	2.026***
Sweden	1.885***	1.50***	1.306***	1.251***
USA	1.883***	1.13	1.033	1.671***
Australia	1.869***	1.70***	1.534***	1.661***
Ireland	1.804***	2.13***	1.528***	1.660***
Denmark	1.788***	1.11	1.381***	1.657***
United Kingdom	1.758***	1.55***	1.962***	1.476***
Finland	1.754***	1.18*	1.567***	1.045
Luxembourg	1.659***	1.20*	2.338***	1.294***
France	1.640***	1.72***	2.077***	1.620***
New Zealand	1.619***	1.15	1.629***	1.204**
Portugal	1.607***	2.60***	2.388***	1.884***
Netherlands	1.602***	1.25*	2.515***	1.930***

*Significant at .05; **significant at .01; ***significant at .001.

Table II. Impact of gender and SES on aspirations after controlling for academic performance (odds ratio).

Influence of School Composition

The statistical analyses carried out up till now have been based on a classic model of logistic regression, each time applied to each country. In order to estimate the influence of school composition, multilevel analyses will be used, introducing school-level variables (school composition) at level 2.

In addition to the individual variables previously used (see Table II) and introduced at the student level, at the school level at first we added the 'mean of the student performance in mathematics of the school' in order to estimate the possible influence of 'academic' composition on student educational aspirations (Table III). As shown in Table III, the 15 countries in which the school's mean level of mathematics positively influences 'university-level' educational aspirations have education systems characterised by early tracking (except in France, where such tracks only begin at age 15). In these countries, the higher the mean score of the school in mathematics, the more young people attending that school intend to pursue 'university-level' studies. By contrast, in comprehensive education systems (no tracks before the age of 15), two different kinds of results are observed. In 9 countries, the 'mean mathematics score of the school' variable is not statistically significant. In 4 other countries, academic composition (mean maths score per school) has a (small) 'negative' relationship with aspirations. This result can possibly be interpreted by reference to the 'Big Fish Little Pond Effect' (Marsh, 1991). We will discuss this issue further in the final discussion.

Country	Individual characteristics (Level 1)				School characteristics (Level 2)
	ESCS	Gender	Mathematics	Reading	Mean PISA mathematics score of the school
Hungary	2.111***	2.24***	1.871***	1.196*	5.205***
Greece	1.998***	2.34***	2.138***	1.218***	4.415***
Korea	1.724***	1.25	1.660***	1.338***	3.898***
Japan	1.815***	0.42***	1.504***	1.240**	3.830***
Austria	1.884***	1.10	1.675***	0.984	3.692***
Netherlands	1.467***	1.13	1.544***	1.606***	2.955***
Luxembourg	1.381***	0.94	1.955***	1.211**	2.897***
Slovakia	2.216***	1.89***	2.077***	1.796***	2.426***
France	1.546***	1.73***	1.729***	1.372***	2.160***
Germany	1.852***	1.13	1.641***	1.274**	2.103***
Belgium	1.891***	1.29***	1.742***	1.318***	1.634***
Czech Republic	2.359***	1.89***	2.408***	1.544***	1.564***
Portugal	1.582***	2.57***	2.212***	1.764***	1.550***
Italy	1.717***	1.79***	1.303***	1.431***	1.493***
Switzerland	2.232***	1.09	1.747***	1.264***	1.487***
Finland	1.734***	1.18**	1.552***	1.045	1.277
Australia	1.821***	1.80***	1.552***	1.696***	1.178
Iceland	2.055***	1.47***	1.672***	1.400***	1.158
United Kingdom	1.770***	1.55***	2.012***	1.546***	1.036
Ireland	1.798***	2.17***	1.527***	1.660***	1.031
Norway	2.288***	1.41***	1.389***	1.377***	0.895
Sweden	1.868***	1.49***	1.324***	1.255***	0.889
Poland	2.642***	2.43***	2.116***	1.315***	0.801
Denmark	1.798***	1.09	1.423***	1.691***	0.792
Canada	2.050***	2.06***	2.006***	1.159***	0.750***
New Zealand	1.634***	1.15	1.706***	1.234***	0.720**
USA	1.934***	1.12	1.109	1.729***	0.719***
Spain	2.023***	2.28***	2.499***	2.206***	0.628***

*Significant at .05; **significant at .01; ***significant at .001.

Table III. Influence of individual characteristics and mean mathematics score per school on aspirations.

In fact, the upper part of Table III is tricky to interpret and the clear-cut differences between comprehensive and tracked systems need further consideration. At the factual level, one observes that, after having taken individual student characteristics into consideration, there is a positive relationship between a school's academic composition and student aspirations in these 15 education systems in which tracking starts at age 15 or earlier. But this composition index (mean ability in mathematics) is difficult to interpret: on the one hand, it can reflect the peer group characteristics; on the other hand, it can also reflect the quality of the curriculum (highest standards), which probably co-varies with the academic mean performance of the school. This issue is crucial because, by definition, tracked education systems do not have the same standards and instruction for all students. For instance, students in vocational tracks usually have few (if any) mathematics lessons per week.

In order to better grasp the influence of the school composition on aspirations in these tracked education systems, a complementary analysis was carried out; for this analysis, only students attending schools offering academic tracks only are considered. In that way, the influence of formal curricular differentiation between tracks is neutralised, and the mean mathematics score can be considered as a measure of the school composition influence. Conducted for 12 countries [6], the results of this new analysis are presented in Table IV (only the Odd Ratio relating to the mean academic performance of schools is displayed).

Country	Mean maths score of school
Hungary	5.35***
Japan	3.406***
Greece	2.733***
Austria	2.657***
France	2.084***
Korea	1.887**
Portugal	1.780***
Slovakia	1.619***
Switzerland	1.532***
Belgium	1.454*
Italy	1.397*
Netherlands	1.154
Czech Republic	1.117

*Significant at .05; **Significant at .01; ***Significant at .001.

Table IV. Influence of mean academic performance of school (tracked systems; schools with academic tracks only).

These results reveal that, with the exception of the Czech Republic and the Netherlands, the influence of the average performance of the school on aspirations holds steady when limiting the scope to schools offering only academic instruction. We will also return to this result later in the discussion.

The analysis carried out in Table III was next performed using the mean averaged sociocultural index of the school (measure of school social intake) instead of average school achievement. Table V only presents values relating to the 'mean ESCS level of the school', the value of the other parameters at the student level being extremely similar to those presented in Table III. The results show that, where the mean sociocultural level per school has a statistically significant influence (in 20 out of 28 countries), it always goes in the same direction: students intend more often to pursue 'university-level' studies if they attend a school with a more privileged sociocultural background on average. Strong differences nevertheless appear between countries; the mean sociocultural index per school is especially influential in Japan, Austria and Hungary. The particularly strong influence of the sociocultural level of peers within some countries, including the three mentioned above, must nevertheless be interpreted taking into account the school sampling method adopted in these countries. Indeed, these countries (Austria, Hungary, Italy, Japan and the Czech Republic) decided to treat tracks within a given school as if they were distinct schools. In these countries, greater variance between (so-called) schools is therefore artificially increased, which probably in part explains some of the gaps observed in Tables III and V. As in the previous analysis, education systems where no statistically significant influence of the mean sociocultural level of school is observed are comprehensive ones (no tracking before age 15).

The results presented in Tables III, IV and V obviously show that it is not only the individual characteristics of young people that influence university-level educational aspirations. The academic environment in which the young people develop, here measured via peer characteristics, also has an influence. It should also be stressed that, among the characteristics of school composition taken into consideration, mean sociocultural background appears more influential on average than the academic level of the school; it also has a statistically significant influence in more countries.

Country	Mean ESCS level of the school	Country	Mean ESCS level of the school
Japan	20.307***	Iceland	1.598***
Austria	7.128***	Norway	1.484***
Hungary	6.595***	Australia	1.454***
Korea	4.103***	Canada	1.286***
Italy	3.717***	Finland	1.242*
Switzerland	3.516***	Portugal	1.093
Netherlands	3.475***	Sweden	1.045
Greece	3.429***	Ireland	1.041
Slovakia	3.256***	Spain	1.028***
Luxembourg	3.197***	United Kingdom	0.966
Germany	2.552***	New Zealand	0.961
Czech Republic	2.335***	USA	0.921
Belgium	2.184***	Denmark	0.887
France	1.908***	Poland	0.834

*Significant at .05; **Significant at .01; ***Significant at .001.

Table V. Influence of school composition (mean ESCS per school) on aspirations

Institutional Context

Besides within-countries analyses, this study aims at estimating whether differentiation in lower-secondary education leads to an increase in social inequalities and school composition influence on educational aspirations.

Various indicators of educational system differentiation have been selected – namely, (i) the age of the first differentiation in the academic career of students; (ii) the percentage of 15-year-old students who no longer follow academic education; (iii) the percentage of between-school variance of student performance in mathematics; and, finally, (iv) the percentage of between-school variance in the sociocultural level of students. In other words, we have thus selected two indicators directly linked to tracking (age of first orientation and the percentage of students outside of academic education at age 15) and two indicators relating to differences between schools. Those latter differences are of course influenced by the presence of tracking as well as by other characteristics relating, in particular, to residential segregation and the way students are assigned to schools (catchment areas or not). It is worth stressing that these various indicators of differentiation strongly correlate among themselves.

Table VI presents the correlations between, on the one hand, these various indicators of differentiation and, on the other, the odds ratios of the main previous analyses. Since the OECD countries participating in PISA 2003 could not, strictly speaking, be considered as a simple random sample, no inferential test can be computed for these 'country' analyses.[7] Nevertheless, in order to avoid over-interpreting variations which might be seen as random, no correlations below .40 will be reported in Table VI.

The first two lines of Table VI show that, in education systems with early tracking, social inequalities in educational aspirations as well as social background self-selection are stronger. Among these first two indexes, the first one most closely correlates with the indicators of differentiation. The weight of sociocultural background on educational aspirations is particularly strong if tracking appears earlier in students' academic careers (age variable) and affects a higher percentage of students. In addition, social background self-selection also appears to be strongly correlated with the characteristics of educational systems.

Moreover, the last two lines of Table VI show that the effect of school composition is also stronger in differentiated educational systems. This relationship is particularly obvious when one

considers the mean sociocultural level of peers, but is also manifest when one considers the academic average performance of other students in the school.

	Age of first selection	% of students in non academic tracks	Between-school variance in the PISA maths score	Between-school variance in the sociocultural index
Social inequalities of 'university-level' educational aspirations (Table I)	-0.65	0.55	0.52	0.66
Social background self-selection (Table II)	-0.49	0.40		0.48
Influence of mean maths score of the school (Table III)		0.41	0.50	0.42
Influence of mean sociocultural level of the school (Table V)[1]	-0.72	0.79	0.72	0.69

[1]Considering the score obtained for Japan in the table 5 and statistics method based on Ordinary Least Squares (OLS), we chose to consider this country like an *outlier*. It has not been included in the correlation analysis.

Table VI. Stratification of education systems and aspiration inequalities.

Discussion

The main objective of this article was to analyse social inequalities in the 'university-level' educational aspirations expressed by 15-year-olds. Three successive analyses were performed.

First, the influence of sociocultural background on the educational aspirations expressed by students was estimated. Confirming prior evidence, our results show that, in all countries studied, sociocultural background is related to educational aspirations. This first result allows us to confirm that 15-year-olds have moved beyond an idealised vision of educational aspirations. As Dumora underlined it, young people at this age adopt a more 'probabilistic' approach (Dumora, 1990), evaluating their aspirations with reference to their actual academic performance and social and cultural background. Indeed, our analyses highlight the fact that this process of 'reevaluation' is not only influenced by academic performance: in all countries studied, after controlling for academic performance in mathematics and reading literacy, aspirations still differ according to students' sociocultural background. Such a result is a clear demonstration (probably illustrated here for the first time with such a large group of countries) of a social self-selection process, usually interpreted, since Boudon's seminal work (1973), as the result of the individuals' rational choices involving evaluating the costs, risks and benefits tied to continuing studying, according to their distinct social positions and resources.

After having controlled for some individual variables (gender, academic performance in PISA and sociocultural background), we next studied the influence of the local school environment on the educational aspirations of young people. This influence was measured using two variables: the mean sociocultural level of students in the school, and their mean performance in mathematics. This led us to find that 'university-level' educational aspirations are not only influenced by the students' individual characteristics: in many countries, the school environment in which the young person develops also exercises an influence on educational aspirations.

The impact of the mean sociocultural level of the school on educational aspirations is easier to interpret. In 20 of the 28 countries studied, students with comparable academic performances and family backgrounds have 'higher' aspirations when they come from a school attended by young people from more privileged backgrounds. This result calls for further investigation in order to better understand the processes through which the sociocultural context of the school influences the educational aspirations of young people. According to our review of the literature, Law's theoretical framework (1981) should be submitted to rigorous empirical evaluation. It is, in any case, reasonable to think at this stage that associating with peers from socioculturally privileged backgrounds influences educational aspirations through an interactive process of modelling

identities and aspirations, on the one hand, and through providing access to relevant information, on the other.

As regards the academic composition effect, let us remember that in our first analysis (Table III), there is a very sharp contrast between systems that track 15-year-old students and comprehensive ones. In the former, the impact of academic composition is systematically significant and positive. In the latter, the effect of academic composition is most often not significant, or even weakly negative. This negative influence of peer level on aspirations, which was observed in Canada, New Zealand, the United States and Spain, must in our view be read as a manifestation of the Big Fish Little Pond Effect (whereby students comparing themselves with high-level peers come to undervalue their own qualities and consequently their aspirations), and confirms prior results in the US context observed by Marsh (1991) and Marsh and O'Mara (2010).

Observing that in all tracked education systems the academic composition has a strong positive and statistically significant effect led us to a complementary analysis aimed at verifying whether this effect (which we at least partly interpret as a matter of peer influence) was not rather an artefact and the result of curricular differences between the tracks in question. For the tracked education systems, we only included (Table IV) students attending schools which only offer academic tracks. In the vast majority of these countries, the positive effect of a 'higher' academic composition on aspirations remains significant even among 'academic only' schools. Why does academic composition have this influence in tracked education systems while it does not in countries with a comprehensive structure and a common core curriculum? An initial, partly methodological explanation can be offered: the percentage of between-school variance of the students' performance was computed; it appears that the differences between 'academic only' schools are on average higher in tracked education systems than are the differences between all schools in comprehensive systems. A more significant proportion of between-school variance of academic performance is therefore more likely to covary with our measure of aspirations.

But beyond this initial explanation, it seems important to discuss the nature of peer influence in such school systems. To do so, the recent discussion of Dai and Rinn (2008) about the non-automaticity of BFLPE can be helpful. These authors remind us that the BFLPE is probably the sum of two contradictory effects, a contrast effect and an assimilation effect. The contrast effect occurs when individuals in high-performing groups compare themselves with gifted individuals in those groups and thereby are at risk of underestimating themselves. But Dai and Rinn (2008) highlight that attending a high-performing group can also trigger an effect of assimilation ('I feel similar to other members of the group'). When effects of assimilation are greater than effects of contrast, being a member of a high-performing group does not have negative consequences for self-concept; on the contrary, it can even have a positive influence. For Dai and Rinn (2008), the balance between the negative influence of contrast and the positive influence of assimilation might depend on individual characteristics as well as on particular characteristics of the context. Looking at the results of Tables III and IV, it seems that in the context of tracked education systems, effects of assimilation are stronger than effects of contrast, which could explain the nearly always positive influence of academic composition. These education systems assume that students should follow different paths at an early stage (Dupriez et al, 2008), often with reference to a meritocratic-type discourse. In such an environment, belonging to a high-level academic track and a high-performing school goes possibly with a feeling of pride called 'reflected glory' (or the contrary for students attending less prestigious tracks or schools). Such pride does much more to promote a feeling of assimilation into the group than do comparisons (which can also potentially be unfavourable) amongst its members. From our point of view, this is the most plausible interpretation of this result, consistent with the Dai and Rinn hypothesis suggesting that the balance between contrast and assimilation depends on the context.

Finally, we wanted to examine whether variations between countries as regards the influence of family sociocultural background and school composition on educational aspirations may be explained by structural characteristics of education systems - in particular, early tracking in lower-secondary education. Buchman and Park (2009) had showed, comparing two groups of five countries, that the influence of the socioeconomic status on educational aspirations (after controlling for mathematics achievement) was higher in highly differentiated systems than in comprehensive ones. We show that with a better control for students' achievement (taking into account mathematics and reading literacy data), such a relationship is observed for a larger group

of countries. But Table VI also shows that in differentiated school systems, raw social inequalities in educational aspirations (without control for achievement) are greater, as are school composition effects.

One should be cautious, however, when interpreting the discrepancies in results amongst countries. Even if the relative indicators of differentiation in education systems 'explain' an important part of the observed variance, differences between countries still remain. They are likely to be explained in terms of other parameters that have not been taken into consideration by this study. At the country level, future studies (maybe focused on a smaller number of countries) could take other variables into consideration, such as conditions of access to higher education, added value on the labor market of a diploma at this level, and more cultural parameters, including the symbolic status of higher education and the place of meritocracy in education systems.

Yet, despite the limits of the present research, the results presented in this text increase our body of knowledge concerning this issue, and differences observed between education systems help identify the processes influencing social inequalities in educational aspirations. In particular, evidence was found that early and intensive differentiation of students is linked with particularly strong social inequalities. Why is this so? In the section titled 'Impact of the Institutional Context', we mentioned (e.g. Hanushek & Woessmann, 2006) a well-known finding: early tracking is nearly always linked with increased social inequality in academic performance. Young people from underprivileged backgrounds more often attend less prestigious tracks. In this context, two competing processes probably affect their educational aspirations. In the 'academically' less prestigious tracks, young people are objectively confronted with a curriculum that prepares them less well for higher, university-level education. After several years of exposure to these programmes, the distance between them and the prerequisites of university education has been growing – students and their teachers are likely to be aware of this. When, in some countries, these tracks are clearly vocational training tracks, access to university education is probably not even considered by these students. Moreover, in these early differentiated systems, young people who poorly perform at the academic level are aggregated in tracks and/or schools with other low achievers, also coming more often from underprivileged families. Our analyses have shown that, at the sociocultural and academic levels, these contrasted school compositions often influence aspirations. This probably takes place through processes of assimilation, modelling and access to the social networks that allow the construction of a higher education project.

To sum up, a double effect seems to occur: a tracking effect (via the instructional content and the standards), and a peer effect through processes of socialisation, modelling and identification. The effects of these various processes are cumulative, which helps us to understand why social inequalities in educational aspirations are stronger in systems characterised by early differentiation. This finding is especially alarming because it is also observed when students' academic performance is controlled for. Students who could, on the basis of their academic ability, legitimately aspire to study in higher education or university do not because they are resigned, they have lost confidence in their abilities, or they are influenced by their peers.

Notes

[1] These countries are: the United States, Norway, Spain, Hong Kong, Korea, Thailand, Greece, Hungary, France, Switzerland, Germany and Austria.

[2] In regards to this classification, Level 5A programmes are higher education programs mainly relying on theory and offering qualifications sufficient for then being admitted to cutting-edge research programs (these cutting-edge research training programs, which generally lead to a doctorate, correspond to Level 6).

[3] Economic, social and cultural status (ESCS).

[4] The analyses could have been repeated five times by using the different plausible values included in the PISA international database. Using one plausible value provides an unbiased estimate of the statistics but slightly underestimates the standard error as the imputation error is not associated with the sampling error. However, as these analyses are conducted at the country level, without any further breakdown, the underestimation of the standard error was deemed small enough to not need to reproduce the analyses five times.

[5] In IEA (the International Association for the Evaluation of Educational Achievement) and OECD surveys, the computation of international indicators or of any data transformation does not take into account the size of the country, but gives to each country an identical contribution.

[6] Information relating to the educational tracks offered in schools was not available for Germany, and Luxembourg presented a sample that was too small once the operation involving selecting schools had been carried out.

[7] For the same reason, we have not used a hierarchical linear model with country variables at Level 3.

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