Social Class, Ability and Choice of Subject in Secondary and Tertiary Education in Britain

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Abstract

This paper examines the impact of family background (social class, cultural and economic capital) and ability on the choice of subjects in secondary and tertiary education in Britain. Using a framework that integrates rational choice perspectives and cultural reproduction theory, we assume that children take their parents' social position as a reference for their own choices, and are guided mainly by the amount of economic and cultural capital that is available within the family. Using longitudinal data from the 1958 British birth cohort (N = 13,245), the empirical analysis shows that children from higher social class backgrounds achieved a higher standard in both humanities and scientific subjects in primary and secondary school. Furthermore, children of the professional class were relatively likely to choose the prestigious subjects of medicine and law in university, independent of ability. Both absolute and relative levels of ability were relevant to the choice of subject at degree level, as it was found that people chose subjects that they were relatively good at compared to other subjects. This concept of 'comparative advantage' gives additional insight into field-of-study choices, but does not explain the gender segregation across disciplines.

INTRODUCTION

The question of social class inequality in educational opportunities and outcomes has long been the focus of sociological attention. Evidence has been provided that absolute differences in rates of educational participation between the classes have reduced during the 20th century (Jonsson and Mills, 1993a, 1993b; Hellevik 1997). However, it seems that the association between social class and educational attainment has remains intact despite educational reforms (Halsey et. al. 1980; Shavit and Blossfeld 1993; Dronkers 1993). To date, most of the research on educational inequalities focuses on educational *level*, and does not acknowledge the importance of field of study, or subject. Yet it seems that field of study affects many aspects of people's lives, such as labour market outcomes (Kalmijn and Van der Lippe 1997, Marini and Fan 1997), life styles (Van de Werfhorst and Kraaykamp 2001), and political orientations (Crotty 1967; Nilsson and Ekehammar 1986). Therefore, assessments of the educational 'openness' of societies that focus only on educational level are partial.

Research examining the extent to which children are likely to choose subjects that are associated with their parents' characteristics has been carried out in Norway (Hansen 1997), the Netherlands (Van de Werfhorst et al. 2001) Sweden (Dryler 1998) and the U.S. (Davies and Guppy 1997). In general, this research takes the line that parents' interests are communicated to children, and the children are therefore likely to choose subjects that correspond to their parents interests. In addition to this, Hansen (1997), Davies and Guppy (1997) and Van de Werfhorst et al. (2001) argue that students' choice of subject must be understood within the system of both economic and cultural stratification, as children choose subjects that correspond to their parents' positions in both the economic and the cultural hierarchy. The present study builds on this line of research, and explores the impact of

parental background (social class, economic and cultural capital) on the choice of subject in secondary and higher education in Britain. We develop a theoretical framework of subject choices that links rational choice perspectives on educational decision making with cultural reproduction theory.

It is crucial to examine the impact of ability on subject choice, as prior attainment is likely to constrain the choice of academic subjects. Yet, of previous studies examining family background influences on subject choice, only that by Davies and Guppy (1997) incorporates a measure of students' ability. Note that we do not believe it is possible to make an empirical distinction between 'ability' and attainment in some test or examination at a given time. We do not believe that 'intrinsic ability' as distinct from actual attainment can be measured. We use the term 'ability' to mean prior attainment in a specific test. As measured ability is associated with social class, one must ask whether the effect of parental background on students' choice of subject found in previous research is in fact due to the transmission of tastes and interests from parents to children. An alternative explanation is that social background is associated with ability, which in turn is associated with subject choice. Furthermore, it is possible that students' abilities in different subjects vary according to the *type* of resources (cultural or economic) that their parents' have.

We aim to answer two key questions:

1. To what extent are (measured) abilities in specific subjects in primary and secondary school affected by family background?
2. To what extent do family background and measured abilities in primary and secondary school influence subject choice at degree level?

COMPARATIVE ADVANTAGE, FAMILY BACKGROUND AND SUBJECT CHOICE

We treat ability in a multi-dimensional way, using Jonsson's (1999) concept of 'comparative advantage'. Jonsson (1999) argues that girls' comparative advantage in arts and humanities subjects may help to explain the fact that they are less likely than boys to select scientific and technical fields of study. Quite simply then, students will choose those subjects that they are comparatively good at. (Note that, though we refer to individual students' choices throughout this paper, we of course acknowledge that these choices are constrained, and that such choices are, to varying degrees, family rather than individual decisions).

We use O-level exam grades (age 16) in several subjects as measures of academic ability. In order to analyse the extent to which subject choice is explained by comparative advantage, we distinguish three types of ability measured by average examination grades in three groups of subjects: humanities, sciences, and social studies subjects. In turn, these are set off against the others in order to create measures of comparative advantage. Comparative advantage helps to determine students' preferences within the set of available options. So, a student who gains an A grade in English and a B in maths will be less likely to choose to pursue maths at degree level than a student who gains a B in maths and a C in English. Students have a higher probability of success in a subject area where they have a comparative advantage, and are also likely to enjoy their 'best' subjects most.

Previous research suggests that students from 'cultured' homes, where reading and other forms of cultural participation are encouraged may have a comparative advantage in literacy, and in arts and humanities subjects in general (cf. Uerz, Dekkers & Dronkers 1999). Cultural participation may also lead these students to enjoy arts and humanities subjects more than scientific and technical subjects, as the former subjects are connected with their leisure

pursuits. For example, those who read at home, for pleasure, can be expected to gain the most enjoyment from the study of literature. Students from homes lacking in 'cultural capital' may find it harder to compete in arts and humanities subjects than in scientific and technical subjects, where they do not face the same comparative disadvantage. The effects of home background may be comparatively important for arts and humanities subjects, whereas school effects have more of an impact on attainment in maths and sciences (Coleman 1975, Shaycroft 1967, Postlethwaite 1975, Brimer et al. 1977, Mortimore et. al. 1988, Brandsma and Knuver 1989).

An advantage of explanations of educational choices in terms of ability and 'comparative advantage' is that such explanations do not rest on any assumptions regarding students' knowledge of the labour market returns to the various curricula on offer. The assumption that teenage decision-makers have perfect knowledge of the labour market returns to education has been criticised (Manski 1993). It seems plausible that students' knowledge of, and ability to predict, labour market outcomes is in fact rather weak, and that, partly as a consequence of this, students faced with the choice of which degree subject to enrol for may focus largely on their chances of success in, and associated enjoyment of, the fields of study on offer (Rochat and DeMeulemeester 2001).

Rational Choice Theory

Boudon (1974) makes a crucial distinction between the 'primary' and 'secondary' effects of stratification. Boudon states that the 'primary effects' of stratification are cultural inequalities that determine the academic abilities of pupils. Social class differences in both overall ability and comparative advantage can be seen as reflecting the 'primary effects' of stratification, in Boudon's terms. The 'secondary effects' of stratification are the different costs and benefits that are associated with different educational decisions for students from different social classes. The 'secondary effects' of stratification explain any social class difference in

educational participation that remains once one has controlled for performance at the previous stage.

For Boudon, the costs and benefits associated with each educational option vary with social class because ambition is relative to the social starting point of an individual. So, a working class child who wants to be a lawyer must be more ambitious than a middle class child who wants to be a lawyer. Therefore, high prestige educational options may be essential in avoiding social demotion for middle class pupils, whereas working class pupils can avoid social demotion without pursuing such options. On Boudon's analysis, this leads to middle class pupils being more likely to pursue such options than working class pupils at any given level of ability.

For Boudon's argument to work, the assumption must be made that people's priority is to avoid downward mobility, rather than to pursue upward mobility (Breen & Goldthorpe 1997). Otherwise, prestigious educational options might be more attractive to students from working class backgrounds than to students from middle class backgrounds, since the social distance likely to be travelled as a result of successful completion of a prestigious course will be far greater for the working class student. Breen and Goldthorpe term this desire to avoid downward mobility 'relative risk aversion'.

In line with the rational choice framework, we start from the assumption that children of the various social classes make conscious educational decisions. However, the models formulated by Boudon and Breen and Goldthorpe aim to explain class differences in *levels* of educational participation (e.g. continuing in education or dropping out, choosing between a prestigious academic track and a less prestigious vocational track), rather than the impact of class background on subject choice. The application of this framework to the question of subject choice in higher education for the NCDS cohort is likely to be problematic. A small

minority of this generation gained access to higher education, and those individuals faced little risk of downward mobility into the working class or long-term unemployment, regardless of the subject they chose.

Cultural Reproduction Theory

According to Bourdieu's theory of cultural reproduction (Bourdieu 1984; Bourdieu & Passeron 1990), the explanation for social class inequalities in educational attainment lies in the social distribution of 'cultural capital'. Bourdieu states that cultural capital consists of familiarity with the dominant culture in a society. The possession of cultural capital varies with social class, yet the education system assumes the possession of cultural capital. This makes it very difficult for working class pupils to succeed in the education system. Moreover, according to Bourdieu, educational reproduction leads to social reproduction, and the crucial role played by the education system in allocating occupational positions legitimates social inequalities.

During the twentieth century, educational credentials have become a key mechanism for allocating occupational positions. Arguably, this has led to an increase in the importance of cultural, as opposed to economic, capital in the transmission of privilege. On the other hand, the direct transmission of economic capital has remained extremely important. This can be seen as resulting in a two-dimensional space of social status; one based on economic capital and one based on cultural capital. It can be argued that two distinct elites have emerged, one that is strong on cultural capital but not on economic capital (e.g. journalists, scientists, public sector employees, artists), the other strong on economic capital but not on cultural capital (e.g. managers in private companies, executives).

Integration of Rational Choice and Cultural Reproduction Theories

The rational choice theory of educational inequality has been opposed to cultural explanations of educational inequality, particularly that defended by Bourdieu (cf. Goldthorpe 1996; Breen & Goldthorpe 1997). In our opinion, the two approaches should be seen as complementary rather than competing with regard to the question of subject choice. The rational choices which people make in pursuit of social mobility (or stability) may be recognised without neglecting the cultural influences that help to form people's preferences. If we want to know what is really going on in students' educational decision making, both perspectives need to be addressed.

Bourdieu's ranking of society on two dimensions (cultural and economic) can be taken as a starting point in bridging the rational choice and cultural reproduction perspectives. Once we acknowledge that the two types of resources (economic and cultural) are unequally distributed among the members of a society, and that they lead to inequalities in life chances, we can evaluate to what extent economic and cultural capital are reproduced across generations through choices of fields of study. While we assume that people make conscious educational decisions based on the costs and benefits associated with each option, the two dimensional social space proposed by Bourdieu may give additional insight into the various factors that shape both students' preferences and the costs and benefits facing them.

Cultural capital is likely to increase students' probabilities of success within cultural fields of study for various reasons, including parental help and guidance (Erikson and Jonsson 1996). Students from 'cultured' backgrounds may also perceive the benefits of cultural fields of study as being particularly high, since they value 'cultural' occupations and cultural participation highly. Cultural fields of study may even enhance the enjoyment that is gained from cultural participation. Finally, the lower likelihood of students with few cultural

resources choosing cultural subjects may be exacerbated by the desire not to be in a minority, as minority status can be seen as imposing a cost to the individual (Jonsson 1999).

Comparable arguments can be applied to the children of the economic elite. Their choice of subject is mainly guided by their parents' position on the economic status hierarchy. To realize class maintenance, or upward mobility on the economic dimension, the economic elite's children are likely to enter fields that develop commercial and financial skills, or other fields that yield high financial returns on the labour market.

Children of working class origin possess relatively little of either type of capital, and therefore cannot be seen as choosing either culturally or economically oriented fields in order to reproduce their family's type of capital. They are likely to select technical subjects because of the proximity to the parents' manual job experiences and because these fields lead to secure labour market prospects (Kelsall et al. 1972).

DATA

The data come from the National Child Development Study (NCDS). The NCDS is a longitudinal study of a single cohort born in Britain in the week of 3-9 March 1958. Data were collected at six time points: 1958 (shortly after birth), 1965 (when the studied children were aged 7), 1969 (aged 11), 1974 (aged 16), 1981 (aged 23) and 1991 (aged 33). The initial sample was designed to be nationally representative of all children in Britain and achieved a

sample size of 17,414 (Shepherd 1995). Table I shows the number of respondents for each sweep.

(Table I about here)

The NCDS gives exceptionally rich information on various aspects of the studied children from birth to age 33. The parents of the studied children were interviewed at the first three sweeps of the study, providing information on social background, age when parents left full-time education, spare-time activities of the parents and so on. Data were also collected directly from the children through tests and questionnaires administered at school at the ages of 7, 11 and 16. Extensive information on exam results was also collected directly from the respondents' schools in 1978. From the age of 16 onwards, the respondents themselves were also interviewed. The fourth and fifth follow-ups in 1981 and 1991 provide detailed information on the respondents' highest qualifications and the subjects they studied. In this paper we make use of data from all five sweeps of the NCDS (1965, 1969, 1974, 1981, 1991) and the exam results collected from the schools in 1978.

VARIABLES

Social class of the parents is operationalised in six categories: professionals, managers, routine non-manual workers, self-employed, skilled manual workers, and unskilled manual workers. Thus, we can examine differences between the children of professionals and managers, the latter of which can be expected to be more oriented towards 'economic' study choices because of the dominance of economic capital in this class. The 'dominance' approach has been used – i.e. mother's or father's occupational class is used, whichever is the highest. Parental occupation is taken from sweep 2, or if necessary from sweep 1.

Parental reading behaviour: Bourdieu does not define 'cultural capital' in a precise way, and researchers have operationalised the concept in a variety of ways. Bourdieu himself uses measures of book reading and buying, and cinema, theatre and concert attendance as indicators of cultural capital (Bourdieu and Boltanski 1981). Parental cultural behaviour is often used as a proxy for cultural capital in international research (De Graaf 1986; Wong 1998; Aschaffenburg & Maas 1995). Parents who participate in high culture are believed to express an acquaintance with the dominant culture in western societies in the way Bourdieu (1984) has set out. Crook (1997), De Graaf, De Graaf and Kraaykamp (2000) and Sullivan (2001) have shown that reading behaviour is associated with academic success, whereas cultural behaviour outside the home (e.g. theatre and concert attendance, museum visits) is not. Because of our interest in the role of cultural capital in forming preferences for educational specialisation, we employ a measure of parental reading behaviour. Parental reading behaviour is available from sweeps 1 and 2 in the NCDS (when the child was 7 and 11 years of age). The measure consists of three items for both parents: 'mother reads to child', 'father reads to child', 'mother reads newspapers in spare time', 'father reads newspapers in spare time', 'mother reads books (including technical journals) in spare time', 'father reads books in spare time' (hardly ever / occasionally / most weeks). Cronbach's alpha = 0.68, which is reasonable with six items. We acknowledge that this measure does not cover many of the meanings that might be attributed to 'cultural capital'. In addition, our measure of reading behaviour is largely one of quantity rather than quality. An ideal measure would give more detail on the type of reading – e.g. whether it can be defined as part of high culture or popular culture.

Reading attainment and *mathematics attainment* are measured with a standard test at age 11. Both test scores are standardized (mean = 0, sd = 1) for the group of 13,245 respondents with all relevant information obtained.

Comparative advantage at age 11 is measured as a function of these two standardized measures, similar to that proposed by Uerz, Dekkers & Dronkers (1999). Standardized mathematics attainment is subtracted from standardized reading attainment, so that a positive value of comparative advantage refers to a relatively high score on reading compared to mathematics. This measure allows us to assess whether the gap between ability in reading and ability in mathematics affects educational choices.

Absolute ability in humanities, science and social studies at age 16: We are further interested in the demonstrated 'ability' of students in public examinations in Britain. These are the General Certificate of Education Ordinary level (GCE 'O' level) and the Certificate of Secondary Education (CSE) taken the age of 16. There are three reasons why we prefer to look at O-levels/CSEs rather than and GCE Advanced levels taken at the age of 18. First, only a minority of students take A levels (which represent the traditional route to university). Second, A levels are quite specialised, with students typically only taking three subjects. A much broader range of subjects was typically taken at GCE O level and CSE, allowing us to construct a more valid measure of comparative advantage. Third, the NCDS contains detailed information on grades for O-level/CSE subjects, whereas the information on A-levels is restricted to whether people have passed an A-level – no grades are provided. Information on grades was necessary in order to construct a measure of comparative advantage.

We measured three types of ability at the age of 16, measured by the average grade in three types of subject: *humanities subjects* (French, Other modern languages, English, Arts, History), *science subjects* (Biology, Chemistry, Combined sciences, Geology, Technical subjects, Mathematics, Physics), and *social studies subjects* (General education, Social science, Domestic science, Commerce). People who did not do O-level/CSE (or not in the

specific subjects) are given a score of 0 on these variables (before standardization). The standardized score is taken of these three variables.

These measures for humanities, science and social studies attainment at O-level/CSE are based on average grades in these groups of subjects. Students without pass grades in any of the subjects within a group are categorised as having zero attainment in that category. Although the best measures we can construct using the present data, these measures have a drawback as dependent variables. For example, if social class affects the attainment in any of the three subjects, we do not know whether this is due to differential probabilities of entering O-level/CSE examinations in the first place, or to class differences in choices for specific subjects, or to class differences in grades within subjects, or, most likely, a combination of all three of these. The scales should be interpreted as indicating the level of knowledge gained in specific subjects, which is determined by choosing the subjects *and* by the grade level achieved.

Another solution might be to disentangle the various components of our measure; (1) one that analyses whether individuals have done O-level/CSE examinations or not, (2) whether, given the fact that individuals have done these examinations, they have chosen certain subjects or not, and, (3) given their choices, what their grades were for these exams. This would make the whole analyses very complicated, with three types of dependent variables at O-level/CSE instead of one. Although we would have drop-outs in each of these steps that would make the analysis similar to binomial or multinomial transition models as far as O-levels/CSEs are concerned (Mare 1980; Breen & Jonsson 2000), for the analysis of the whole career of educational attainments this would fit less well into our design. A number of people have been enrolled in university who did not do O-level/CSE exams, so they would be included after having dropped them from previous analyses. The structure of our argument is not about

'surviving' educational transitions, but about attainments within certain disciplines, and to what extent this influences the choice of subject in university.

One further note on this is that the subject exam results we use are a consequence of selection themselves. Students' choices of subjects at CSE/O level would have been constrained by the school. In addition to this, students' and their families' ideas about appropriate or 'useful' subjects were no doubt affected by social class. Furthermore, even a student who had opted to pursue a particular subject up to the age of 16 might not be entered for an exam if not perceived by teachers as being sufficiently likely to pass. This poses a problem for our measures of ability, which must be borne in mind in the interpretation of our findings.

Comparative advantage in humanities, science and social studies at age 16: We created three further variables by subtracting two standardized scores. Comparative advantage in humanities versus science subjects and comparative advantage in humanities versus social studies subjects have a high value for people whose humanities attainment was relatively high. Comparative advantage in science subjects versus social studies has a high value for people whose science attainment is relatively high.

Gender is included in all models.

Degree subject: We are interested in respondents' choice of subject area in their first degree and this is one of our main dependent variables. We took this information primarily from sweep four (1981) when those who went to university would have been enrolled in, or have completed, their first-degree qualification. To maximise the number of cases in the analysis we also included respondents who did their first degree course up to 1991. If the subject of first degree was missing at sweep four, we substituted this with the information collected at

sweep five. Since this is only observed for a minority of the respondents (only those who went to university, N = 1391), we classified this variable in six broad categories.

1. Medicine and law (prestigious professional degrees)
2. Engineering (including technology, computing and agriculture)
3. Science (including mathematics, life sciences)
4. Economics (comprising subjects that are strongly associated with the acquisition of economic, financial and business oriented knowledge and skills).
5. Social studies (social sciences, social work, education)
6. Arts (including humanities).

People who had been enrolled in a degree programme but whose subject is missing are categorised as missing (N = 100).

In Figure 1, we show trends in the distribution of undergraduate students between these fields of study, based on the UK Labour Force Survey. The figure shows an increase in the popularity of the economics and business subjects. Furthermore, the social sciences were most popular for the early to mid-1950s cohort who typically attended university in the 1960s and 70s, after which a substantial decrease in the popularity of social sciences is found. The sciences show no substantial trend, and neither do the fields of medicine and law. The distribution across subjects for the 1956-1960 birth cohort is similar to what is found in the NCDS (see below).

[Figure 1 here]

ANALYSES

Figure 2 depicts the variables in their 'chronological' life course order. After presenting some descriptive analyses we will analyse three consecutive outcomes in the educational career. First we will examine the effects of social class, gender and parental reading behaviour on tested ability in reading and mathematics at age 11. Second, we will analyse O-level and CSE grades in terms of parental characteristics, gender and attainments at age 11. For these two outcomes we will estimate multivariate multiple regression models, which adjust for the correlation of some of the dependent variables (e.g. mathematics and reading attainments at age 11). One advantage of using multivariate models is that we can test whether the effects of the independent variables differ significantly according to the dependent variable. We can, for example, analyse whether the impact of gender on reading attainment is greater than the impact of gender on mathematics attainment, and whether comparative advantage in reading at age 11 has a stronger impact on humanities grades than on science grades at O-level/CSE. Third, we will look at subject choice at university, which we model in terms of parental characteristics, age 11 attainment, and grades at O-level/CSE. We will analyse this outcome using multinomial logistic regression models.

[Figure 2 here]

Descriptive analyses

Before turning to these more complex models, we present some bivariate associations between social class and educational attainment. Table II shows attainment scores at age 11 and average grades at O-level/CSE. It is clear that most ability-related measures are strongly related to social class; the children of professionals have the highest tested ability, followed by the children of managers. The exception is the average grade in social studies subjects, in which there is little variation across social classes. Note that the children of routine non-manual workers are very similar to the children of managers in terms of their school attainment. The children of the self-employed are closest to the average score across all types

of attainment. We must acknowledge that these measures are likely to be affected by subject choice/allocation procedures operating earlier in the students' school careers, as discussed previously. For example, the finding that the average grade in social studies showed little variation across social classes could be due to middle-class students being less likely to take these relatively low-status subjects. Middle class students would then be more likely to score zero on our measure, thus 'deflating' their average grade.

[Table II here]

The association between social class and degree subject is, contrary to our expectations, not significant (Pearson's χ^2 = 36.6, df = 30, not shown). Another way to analyse cross-classifications like this is to use loglinear modelling. If we look at log-residuals for a cross-classification of social class and degree subject, that indicate the extent to which cells are over- or under-represented, we find a significant over-representation of the fields of medicine and law among children from professional class backgrounds (log-residual = 0.55; leading to an over-representation with a factor $e^{0.55}$ = 1.73). In other words, if there were no association between social class and subject choice in higher education, instead of 42 people being classified in this category we would have [42 / 1.73=] 24. So, whereas the table as a whole shows no relation between social class and subject choice in higher education, a more detailed look shows that people from professional backgrounds choose medicine and law disproportionately often. This is the only significant parameter that was found.

Attainments at age 11

Table III shows the impact of social class and gender on students' test scores at age 11. Both reading comprehension and mathematics attainment are strongly related to social class. Girls achieve lower levels in mathematics than boys. Coming from a cultured climate (indicated by parental reading behaviour) is associated with comparative advantage in reading. After

controlling for cultural climate, children of the professional class have a relative *dis*advantage in reading; so among people with comparable cultural climates these children do relatively well at mathematics. If we look at differences between the effects across models we find that parental reading behaviour has a stronger effect on reading attainment than on mathematics attainment (F = 30.94).

[Table III here]

Attainment at O-level/CSE

Table IV shows multivariate multiple regressions of average attainment in the humanities, science subjects and social studies subjects at O-level/CSE. The table shows that social class is strongly associated with humanities attainment at the age of 16. The children of semi- and unskilled manual workers have the lowest level of humanities attainment; while other classes gain considerably better average results. Gender is also important. Girls generally achieved better examination results in humanities than did boys. Also parental reading behaviour influences humanities attainment, independent of test scores at age 11. Reading and mathematics test scores at age 11 are equally associated with humanities attainment. Model 2 shows that the concept of comparative advantage does not help to explain humanities attainments at O-level/CSE.

With regard to science subjects we find even stronger class effects, with exceptionally high scores for the children of the professional classes. Gender is associated with science attainments at O-level/CSE, as girls' attainment is lower than that of boys. Children from cultured home backgrounds reached relatively high standards on science subjects, probably largely because they entered the relevant O-level and CSE exams in the first place. Mathematics test scores at age 11 have a stronger association with attainment in science O levels and CSEs than reading test scores at age 11. In addition, model 2 shows that people

who are relatively good at mathematics compared to reading at age 11 tend to achieve better examination results in the sciences, implying that not only absolute mathematics ability, but also comparative advantage determines choices in secondary education.

(Table IV about here)

Smaller social class differences are found with regard to social studies attainments at O level and CSE. One notable finding is that children of managers achieved higher levels in social studies subjects (which contains commercial subjects), either by choosing these subjects or by gaining higher grades, than children of professionals. Girls achieved higher standards in social studies subjects than boys. Both types of age-11 attainments have an impact on social studies attainments at O-level/CSE, but less strong than the impact on attainments in sciences and humanities. The concept of comparative advantage does not appear to be useful in explaining attainment in social studies subjects.

Subject choice in university

Table V shows a multinomial logistic regression model of the choice of first degree subject. The model shows that children from professional class backgrounds enter the faculties of medicine and law relatively often, compared to the children of unskilled workers. The over-representation of children of professionals in medicine and law is *not* due to class differences in ability at age 11 or examination attainment at age 16. Other class differences are absent, contrary to our expectations. The lack of other class differences is not due to the controls for various sorts of school attainments; a model without age-11 and age-16 attainments also shows no class effects other than the impact of professional origins on choosing medicine or law.

[Table V about here]

If we take a closer look at the impact of ability, we see that children who are comparatively good at reading (as compared to mathematics) at age 11 are more likely to be found in the social studies and the arts, as opposed to medicine or law, engineering, the sciences, or economics. Or, in other words, children who are relatively good at mathematics particularly favour engineering and the sciences, medicine and law, and economics, rather than social studies or the arts. This effect appears to be independent of attainment at O-level/CSE. Comparative advantage in reading (at age 11 – the final year of primary school) retains its impact on subject choice in university, controlling for ability at age 16. This is an important finding, for it indicates that routes to types of study in university that lead to advantageous labour market opportunities – generally the social studies and the arts lead to worse prospects than, say, medicine or the sciences – are already shaped in primary school.

Attainments in humanities, science and social studies subjects at O-level/CSE have an independent effect on subject choice. Children who have attained good grades in humanities subjects tend to choose the arts in university, and are relatively likely to avoid the technically oriented subjects, such as engineering and science. Relatively high levels of attainment in science O levels and CSEs are associated with the choice of engineering and pure sciences at degree level. Conversely, good social studies results at 16+ are associated with the choice of social studies rather than technical subjects and the arts at degree level.

In Table VI the three O-level/CSE attainments are replaced by three indices of comparative advantage. First, comparative advantage in the humanities compared to science subjects is included. It appears that people who have an advantage in humanities compared to sciences are relatively likely to choose the arts and social studies. People who were relatively good at the sciences at age 16+ chose engineering and pure sciences relatively often. Having a comparative advantage in humanities versus social studies subjects at O-level/CSE increased

the likelihood that a student would enter the arts compared to the social studies. The social studies were the most popular degree subject for individuals who were relatively good at social studies at 16+. In addition, comparative advantage in science vs social studies makes the choice of medicine and law, engineering and the sciences more likely.

[Table VI here]

Finally, we can examine gender segregation across fields of study in university, and see to what extent this is attributable to gender differences in ability and comparative advantage. For this reason we display gender effects across three models explaining first degree subject choice. The complete models are not shown here. Table VII shows the parameter estimates for gender.

Across the models in table VII we see that men and women are segregated, with less women choosing medicine and law, engineering, sciences and economics. Furthermore, this difference is more or less stable across the various models, indicating that the segregation across subjects is not attributable to gender differences in ability or comparative advantage. The only subject where a minor reduction in the gender specificity is found is the sciences (Model C compared to A and B). Apparently, part of the under-representation of women in the pure sciences is caused by differences in O-level/CSE attainments in science and humanities subjects. Most of the gender effect remains here too (about 82 percent), implying the over-representation of boys in the sciences cannot be entirely or even largely explained by ability effects. This result confirms findings for Sweden on subject choice in secondary education (Jonsson 1999).[1]

[1] It should be noted that no interaction effects were found between gender and comparative advantage, or between social class and comparative advantage.

CONCLUSION AND DISCUSSION

In this paper we have focused on the effects of family background and ability on academic attainment in secondary education and on the choice of subjects at degree level in Britain. With regard to family background we have focused on social class and cultural capital in the home. The impact of ability is analysed using test results in primary school on reading comprehension and mathematics (age 11), and attainments in O-level/CSE examinations. Furthermore, we have examined the effect of comparative advantage in one subject compared to another on subject choice in higher education. Each of the three educational outcomes that we focus on – attainment at age 11, O-level/CSE attainment in specific subjects around the age of 16, and first degree subject choice in university, is analysed in terms of the independent variables of gender, social class and cultural capital, and of earlier attainments in the educational career.

Our findings with regard to reading and mathematics attainments at age 11 show that social class is very important. The children of the more advantaged social classes have substantially higher scores on both types of ability. Furthermore, children who come from a climate which is rich in cultural capital do particularly well in reading, and have a comparative advantage in reading compared to mathematics. Comparative advantage itself is hardly affected by social class. Gender is associated with comparative advantage, as the difference between reading and mathematics scores is skewed in favour of reading for girls.

Our analysis of O-level/CSE attainment indicates that attainment at age 11 is associated with attainment at 16+. Success in reading and mathematics at age 11 is associated with success in

humanities at O level/CSE. O level/CSE attainment in sciences is associated with mathematics attainment at age 11, and also with comparative advantage in mathematics attainment compared to reading at age 11. This is likely to be partly due to students whose comparative advantage is in mathematics being more likely to choose science subjects at O level/CSE. However, comparative advantage is not associated with humanities and social studies attainment - here mathematics and reading scores seem to have an additive effect only. Girls gained better humanities and social studies grades, and lower science grades than boys at O-level/CSE. Social class has a strong impact on O-level/CSE attainment, as it is associated with the likelihood that children will be entered for examinations, and with the grades achieved (as shown by many previous studies, e.g. Halsey et. al. 1980). The social class effects found on the sciences and humanities were larger than on social studies subjects.

Ability also has a strong impact on subject choices in university. Children who were relatively good at reading compared to mathematics at the age of 11 were most likely to go into the arts and social studies. Those who were relatively good at mathematics chose engineering, the sciences, and medicine and law disproportionately often. Attainments at 16+ in humanities, science and social studies subjects were associated with choices of similar subjects at university. Furthermore, comparative advantage (as well as absolute attainment in specific subjects) is related to the choice of subject. People who gained higher grades in humanities subjects than in science subjects were disproportionately likely to pursue their interest in the humanities at university, people with relatively high attainment in social studies compared to humanities were relatively likely to enter social studies subjects at university, and a comparative advantage in science subjects at O-level/CSE was associated with the choice of engineering and sciences as well as medicine and law. As one would expect, gender had a strong impact on subject choices in higher education. Furthermore, gender differences were not attributable to differences in ability or to comparative advantage in particular subjects. This confirms findings on Sweden provided by Jonsson (1999).

Only one strong class effect was found with regard to first-degree subject choice: children of the professional class were more likely to enter the prestigious fields of medicine and law than the children of unskilled manual workers. Crucially, this difference is not attributable to individual ability at the age of 11 or O-level/CSE attainment. So, even among those with equal attainment earlier in the educational career, those from professional class backgrounds were more likely to choose medicine and law. Medicine and law degrees both take considerably longer than the standard British 3-year undergraduate degree, and this may have been off-putting to children from working-class backgrounds. Furthermore, young people from professional backgrounds (especially, perhaps, the children of doctors and lawyers) may have been more likely to aspire to positions in medicine and law, since this would allow them to maintain the social class status of their parents. No other class effects were found though, which implies that the choice of degree subjects had only modest reproductive power in Britain for the cohort studied. Indeed, no over-representation of working class children was found in engineering, something we might expect from the strongly labour market oriented skills associated with this field. However, this may be because many engineering students would have studied for sub-degree qualifications. Neither was cultural capital in the home associated with choices for the arts in university.

The lack of social class effects on degree level subject choice is less surprising if one considers the characteristics of the cohort studied here. Those members of the 1958 cohort who entered university would typically have done so around 1976. Although the British higher education system was subject to expansion during the 1960s, it was still only a small minority of young people who were able to attend university at this time. Essentially, the British higher education sector remained small and highly academically selective, and the value of a university degree was correspondingly high. Up to this period, a high *level* of educational attainment could be expected to be sufficient for middle class class-maintenance.

It was not crucial to be educated in a specific subject, as simply gaining a degree would ensure the intergenerational transmission of social class status. The working class students of this generation who managed to gain access to the universities were a very small minority, who can be seen as 'over selected', and highly atypical.

In the light of the enormous expansion that has occurred in the higher education systems of most industrialised societies, including Britain, we suggest that subject specialisation can be expected to have much greater importance for younger cohorts, and that greater social background effects on subject specialisation can also be expected. It is clear that the expansion of higher education has allowed many people to be upwardly mobile in terms of educational level, at least in the absolute sense. But this expansion has been accompanied by a process of 'credential inflation', which has reduced the labour market value of undergraduate degrees. Furthermore, increasing numbers of fields of study have become available at degree level. These include subjects such as hotel management and catering which would previously have been served by lower level qualifications. Therefore, the subject in which a degree is gained, as well as the institution at which it was gained, are likely to have increased in importance in the allocation of desirable occupations. Some support for this argument is found in Van de Werfhorst et al. (2000), where subject choices were least affected by parental background in the 1950s birth cohorts compared to later cohorts in the Netherlands.

To what extent do our findings support our general integration of rational choice and cultural reproduction theory? Our findings on the impact of ability and comparative advantage support the assertion that people tend to choose subjects that they are relatively good at, as Jonsson's (1999) rational choice perspective suggests. Although this point may seem quite obvious, previous studies of subject choice have often failed to include measures of ability, let alone measures of comparative advantage.

The findings on early school attainments provide support for our model. As expected, cultural capital has a stronger impact on reading attainment than on mathematics attainment, thereby directly and indirectly increasing attainments in humanities subjects in secondary school. It seems that children from a cultured climate have an advantage in gaining cultural knowledge themselves, thereby reproducing the family's stock of cultural capital.

Although the over-representation of children of the professional classes in the fields that lead to elite professions themselves (medicine and law) fits well into our framework, it must be acknowledged that with regard to first-degree subject choice, our model led us to expect more social class differences than we found. However, we believe that, for later generations, greater social class differences in subject choice at degree level are likely to be found. Greater diversity in the higher education sector has made it increasingly important to examine inequalities in the chances of gaining particular types of undergraduate degree, rather than simply looking at the likelihood of getting a degree at all.

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Table 1 Sample size in the PMS/NCDS

	PMS 1958 Birth	**NCDS 1 1965 7 years**	**NCDS 2 1969 11 years**	**NCDS 3 1974 16 years**	**NCDS 4 1981 23 years**	**NCDS 5 1991 33 years**
Target sample	17,733	16,883	16,835	16,915	16,457	16,455
Achieved sample	17,414	15,468	15,503	14,761	12,537	11,363

Table 2 **Social class and average score on reading and mathematics achievement at age 11 and O-level/GSE subject results**

	Reading age 11 (z-score)	Maths age 11 (z-score)	Average grade humanities subjects O-level/GSE (z-score)	Average grade science subjects O-level/GSE (z-score)	Average grade social science subjects O-level/GSE (z-score)
Parental social class					
Professionals	.748	.780	.678	.744	.017
Managers	.385	.400	.298	.326	.093
Routine non-manual workers	.329	.288	.250	.232	.063
Self-employed	-.040	-.035	-.001	.016	.012
Skilled manual workers	-.178	-.178	-.152	-.164	-.019
Unskilled manual workers	-.380	-.373	-.299	-.309	-.090

[a] Average grades in three O-level/GSE subject groups pertain to the standardized average grade on humanities subjects (French, Other modern languages, English, Any arts, Academic arts, History), science subjects (Biology, Chemistry, Combined sciences, Geology, Technics, Mathematics, Other maths, Physics), and Social science subjects (General studuies, Social science, Domestic science, Commerce).

Table 3 Cross-classification of social class with field of study in higher education

Parental social class	***Field of Study***							*Total*
	Medical /law	Engineering	Science	Economics	Social Sciences	Arts	Unkown	
Professionals	42	28	43	34	49	51	14	261
	16.1%	10.7%	16.5%	13.0%	18.8%	19.5%	5.4%	100%
Managers	39	47	56	54	99	71	22	388
	10.1%	12.1%	14.4%	13.9%	25.5%	18.3%	5.7%	100%
Routine NM	27	31	44	49	63	53	23	290
	9.3%	10.7%	15.2%	16.9%	21.7%	18.3%	7.9%	100%
Self-employed	3	10	14	10	17	9	6	69
	4.3%	14.5%	20.3%	14.5%	24.6%	13.0%	8.7%	100%
Skilled manual	21	24	39	44	79	40	26	273
	7.7%	8.8%	14.3%	16.1%	28.9%	14.7%	9.5%	100%
Unskilled manual	8	15	15	16	30	17	9	110
	7.3%	13.6%	13.6%	14.5%	27.3%	15.5%	8.2%	100%
Total	140	155	211	207	337	241	100	1391
	10.1%	11.1%	15.2%	14.9%	24.2%	17.3%	7.2%	100%

Pearson χ^2: 36.60 (df = 30)

TABLE 4 MULTIVARIATE MULTIPLE REGRESSION OF READING AND MATHEMATICS ACHIEVEMENT, AND COMPARATIVE ABILITY AT AGE 11

	Reading achievement		**Mathematics achievement**		***Comparative ability***	
	b	se	b	se	b	se
Gender (female=1)	-.001	.016	-.051**	.016	.049***	.01
Professionals	.876***	.040	.937***	.040	-.062*	.02
Managers	.603***	.027	.636***	.028	-.033~	.02
Routine non-manual workers	.557***	.028	.533***	.029	.024	.02
Self-employed	.264***	.037	.273***	.037	-.009	.02
Skilled manual workers	.147***	.022	.148***	.022	-.001	.01
Unskilled manual workers (ref.)						
Parental reading behaviour	.215***	.008	.181***	.008	.034***	.00
Intercept	-.294***	.020	-.276***	.020	-.018	.01
R^2	.151		.139		.005	

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

Source: National Child Development Survey (N=13,245)

Table 5a **Multivariate multiple regression of average grade on humanities subjects on selected independent variables**

Model	1		2		3		4	
	b	se	b	se	b	se	b	se
Gender (female=1)	.179***	.017	.177***	.017	.190***	.015	.177***	.017
Professionals	.965***	.040	.818***	.041	.364***	.037	.819**	.041
Managers	.589***	.028	.493***	.028	.182***	.026	.493***	.028
Routine non-manual workers	.542***	.029	.450***	.029	.176***	.026	.450***	.029
Self-employed	.296***	.038	.252***	.038	.117***	.034	.251***	.038
Skilled manual workers	.144***	.023	.112***	.023	.037~	.020	.111***	.023
Unskilled manual workers (ref.cat.)								
Parental reading behaviour			.133***	.009	.033***	.008	.133***	.009
Reading achievement age 11					.270***	.012		
Mathematics achievement					.232***	.012		

age 11								
Comparative ability age 11							.013	.012
Intercept	-.383***	.020	-.331***	.020	-.188***	.018	-.331***	.020
R^2	.082		.098		.285		.098	

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

Source: National Child Development Survey (N=13,245)

Table 5b Multivariate multiple regression of average grade on science subjects on selected independent variables

Model	1		2		3		4	
	b	se	b	se	b	se	b	se
Gender (female=1)	-.148***	.017	-.150***	.016	-.130***	.014	-.144***	.016
Professionals	1.036***	.040	.879***	.041	.370***	.036	.873***	.041
Managers	.630***	.028	.527***	.028	.180***	.025	.524***	.029
Routine non-manual workers	.540***	.029	.441***	.029	.141***	.025	.443***	.029
Self-employed	.320***	.038	.272***	.038	.122***	.033	.271***	.038
Skilled manual workers	.142***	.023	.108***	.023	.026	.019	.108***	.023
Unskilled manual workers (ref.cat.)								
Parental reading behaviour			.142***	.009	.036***	.008	.146***	.009
Reading achievement age 11					.181***	.011		
Mathematics achievement age 11					.375***	.011		

Comparative ability age 11							-.104***	.012
Intercept	-.234***	.020	-.178***	.020	-.021	.017	-.180***	.020
R^2	.088		.106		.341		.111	

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

Table 5c **Multivariate multiple regression of average grade on social science subjects on selected independent variables**

Model	1		2		3		4	
	b	se	b	se	b	se	b	se
Gender (female=1)	.672***	.016	.672***	.016	.675***	.016	.671***	.016
Professionals	.107**	.040	.062	.041	-.053	.041	.063	.041
Managers	.175***	.027	.145***	.028	.066*	.028	.145***	.028
Routine non-manual workers	.141***	.028	.113***	.029	.043	.029	.112***	.029
Self-employed	.109**	.037	.095*	.038	.061	.037	.095*	.038
Skilled manual workers	.069**	.022	.059**	.022	.041~	.022	.059**	.022
Unskilled manual workers (ref.cat.)								
Parental reading behaviour			.041***	.009	.015~	.009	.041***	.009
Reading achievement age 11					.074***	.013		
Mathematics achievement age 11					.054***	.013		

Comparative ability age 11							.008	.012
Intercept	-.415***	.020	-.399***	.020	-.363***	.020	-.399***	.020
R^2	.117		.118		.130		.118	

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

Source: National Child Development Survey (N=13,245)

Table 6a Multinomial logistic regression of subject choice in university on selected independent variables: Model 1 [a]

Model 1	Medicine/law Vs. Social Sciences		Engineering Vs. Social Sciences		Science Vs. Social Sciences		Economics Vs. Social Sciences		Arts Vs. Social Scienc	
	b	se	b	se	b	se	b	se	b	se
Gender (female=1)	-.996***	.208	-2.947***	.303	-1.271***	.185	-1.185***	.185	-.185	.1
Professionals	1.265**	.455	.354	.418	.685~	.387	.378	.389	.625~	.3
Managers	.474	.445	.136	.384	.228	.365	.121	.360	.251	.3
Routine non-manual workers	.545	.464	.142	.406	.423	.380	.461	.370	.408	.3
Self-employed	-.308	.747	.402	.543	.632	.491	.222	.514	-.049	.5
Skilled manual workers	.014	.471	-.461	.413	.009	.379	.064	.369	-.109	.3
Unskilled manual workers (ref.cat.)										
Intercept	-.858*	.411	.122	.340	-.143	.331	-.104	.324	-.463	.3

-2LL: 5004.59, $\Delta\chi^2$ $_{\text{(model 1 – interceptmodel)}}$ = 408.93 *** , df =42

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

[a] The dependent variable category ‘unknown’ is not displayed in the table, but controlled for in the equation. The degrees of freedom refer to the full models including this category.

Source: National Child Development Survey (N=1391)

Table 6b Multinomial logistic regression of subject choice in university on selected independent variables: Model 2 [a]

Model 2	Medicine/law Vs. Social Sciences		Engineering Vs. Social Sciences		Science Vs. Social Sciences		Economics Vs. Social Sciences		Arts Vs. Social Sciences	
	b	se	b	se	b	se	b	se	b	se
Gender (female=1)	-.996***	.208	-2.947***	.303	-1.272***	.185	-1.185***	.185	-.185	.176
Professionals	1.231**	.465	.406	.428	.660~	.396	.475	.398	.579	.373
Managers	.451	.450	.170	.389	.212	.370	.188	.365	.218	.346
Routine non-manual workers	.520	.469	.181	.413	.404	.385	.534	.376	.373	.362
Self-employed	-.314	.747	.413	.543	.628	.492	.245	.515	-.061	.513
Skilled manual workers	.009	.472	-.452	.414	.005	.380	.080	.369	-.116	.361
Unskilled manual workers (ref.cat.)										
Parental reading behaviour	.048	.137	-.071	.131	.036	.117	-.131	.114	.066	.112
Intercept	-.866*	.411	.129	.340	-.149	.332	-.094	.325	-.473	.320

-2LL = 5000.18, $\Delta\chi^2$ $_{\text{(model 2 – model 1)}}$ = 4.41 (df = 6)

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

[a] The dependent variable category ‘unknown’ is not displayed in the table, but controlled for in the equation. The degrees of freedom refer to the full models including this category.

Source: National Child Development Survey (N=1391)

Table 6c Multinomial logistic regression of subject choice in university on selected independent variables: Model 3 [a]

Model 3	Medicine/law Vs. Social Sciences		Engineering Vs. Social Sciences		Science Vs. Social Sciences		Economics Vs. Social Sciences		Arts Vs. Social Science	
	b	se	b	se	b	se	b	se	b	se
Gender (female=1)	-1.003***	.209	-2.955***	.305	-1.279***	.187	-1.194***	.185	-.187	.17
Professionals	1.196**	.466	.327	.434	.615	.398	.449	.399	.586	.37
Managers	.412	.451	.117	.394	.167	.372	.157	.365	.224	.34
Routine non-manual workers	.493	.471	.121	.418	.370	.387	.512	.377	.377	.36
Self-employed	-.378	.749	.270	.552	.548	.496	.202	.517	-.051	.51
Skilled manual workers	-.048	.473	-.567	.420	-.063	.382	.039	.370	-.109	.36
Unskilled manual workers (ref.cat.)										
Parental reading behaviour	.066	.137	-.045	.133	.059	.118	-.116	.114	.065	.11
Comparative ability age 11	-.447**	.154	-.781***	.154	-.519***	.135	-.304*	.133	.052	.12

Intercept	-.854*	.412	.097	.346	-.143	.334	-.073	.325	-.481	.32

-2LL = 4957.14, $\Delta\chi^2$ $_{\text{(model 3 – model 2)}}$ = 43.04 *** (df = 6)

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

[a] The dependent variable category 'unknown' is not displayed in the table, but controlled for in the equation. The degrees of freedom refer to the full models including this category.

Source: National Child Development Survey (N=1391)

Table 6d Multinomial logistic regression of subject choice in university on selected independent variables: Model 4 [a]

Model 4	Medicine/law Vs. Social Sciences		Engineering Vs. Social Sciences		Science Vs. Social Sciences		Economics Vs. Social Sciences		Arts Vs. Social Science	
	b	se	b	se	b	se	b	se	b	se
Gender (female=1)	-.906***	.215	-2.624***	.310	-1.052***	.194	-1.181***	.189	-.205	.17
Professionals	1.013*	.471	.230	.445	.471	.406	.441	.402	.584	.37
Managers	.280	.456	.013	.405	.058	.379	.152	.367	.211	.35
Routine non-manual workers	.386	.474	.091	.429	.307	.394	.500	.378	.366	.36
Self-employed	-.457	.755	-.013	.574	.410	.508	.216	.518	-.046	.51
Skilled manual workers	-.094	.477	-.680	.432	-.129	.389	.032	.372	-.062	.36
Unskilled manual workers										
Parental reading behaviour	.025	.138	-.072	.137	.014	.120	-.117	.114	.064	.11
Comparative ability age 11	-.379*	.159	-.585***	.160	-.374**	.139	-.302*	.136	.020	.12
Average	-.207	.272	-1.546***	.285	-	.255	-.042	.206	.407*	.17

grade humanities subjects					1.072***					
Average grade science subjects	.439~	.260	1.586***	.268	1.231***	.244	-.003	.198	-.281~	.17
Average grade social science subj.	-.355***	.108	-.215*	.105	-.203*	.084	-.014	.076	-.161*	.07
Intercept	-1.045*	.424	-.266	.370	-.457	.351	-.035	.330	-.577~	.32

-2LL = 4852.46, $\Delta\chi^2$ $_{\text{(model 4 – model 3)}}$ = 104.68*** (df = 18)

~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

[a] The dependent variable category 'unknown' is not displayed in the table, but controlled for in the equation. The degrees of freedom refer to the full models including this category.

Source: National Child Development Survey (N=1391)

Table 7 Multinomial logistic regression of subject choice in university on comparative ability [a, b]

	Medicine/law Vs. Social Sciences			Engineering Vs. Social Sciences			Science Vs. Social Sciences			Economi Vs. Social Scie	
Model	5a	5b	5c	5a	5b	5c	5a	5b	5c	5a	5b
	b	b	b	b	b	b	b	b	b	b	b
Gender (female=1)	-.935***	-.994***	-.946***	-2.665***	-2.947***	-2.902***	-1.072***	-1.269***	-1.224***	-1.191***	-1.194***
Comp. ability age 11	-.392*	-.438**	-.398*	-.599***	-.773***	-.738***	-.386**	-.510***	-.473***	-.304*	-.301*
Comp. ability Hum-Sci	-.439~			-1.592***			-1.225***			-.018	
Comp. ability Hum-Soc		293***			.104			.176**			-.009
Comp. ability Sci-Soc			.304***			.241**			.258***		

Model 5a: -2LL = 4881.76

Model 5b: -2LL = 4930.98

Model 5c: -2LL = 4919.44

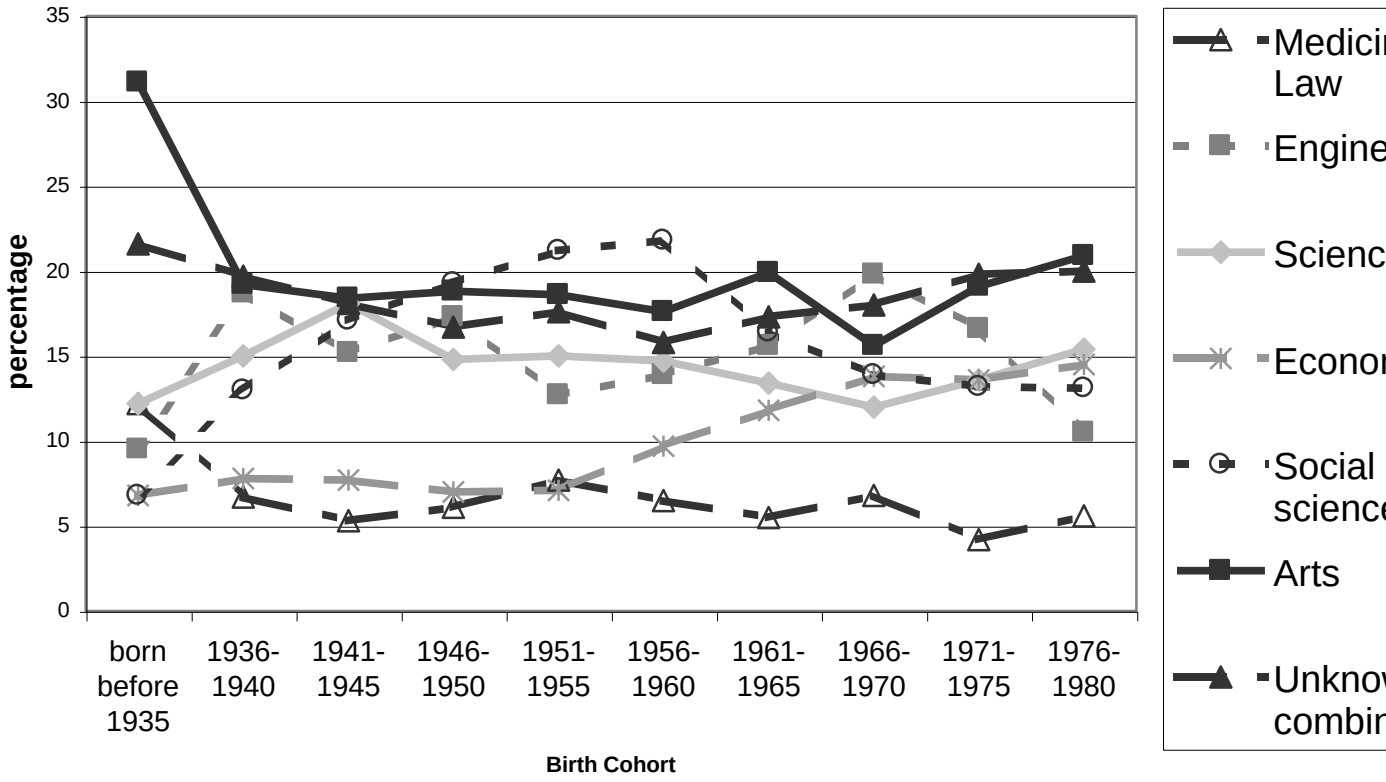
~ p < .10, * p < .05, ** p < .01 , *** p < .001 (two-tailed test)

[a] The dependent variable category 'unknown' is not displayed in the table, but controlled for in the equation. The degrees of freedom refer to the full models including this category.

[b] Controlled for parental social class and parental reading behaviour, models with intercept.

Source: National Child Development Survey (N=1391)

Figure 1 Degree subject choice across birth cohorts



Source: Labour Force Survey 2000

Figure 2 Diagram of family background and educational trajectories