

# Continuing education post-16: does what you study at GCSE matter?

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## Abstract

This paper considers whether subject choice at 14-16 influences post-16 transitions, taking into account prior academic attainment and school characteristics, and if so, whether this accounts for socio-economic, gender and ethnic differences in access to post-16 education. We consider post-16 progression to full time education, A Levels, and studying two or more facilitating subjects at A Level. We use 'Next Steps', a study of 16,000 people born in England in 1989-90, linked to administrative education records (the National Pupil Database). We find that students pursuing an EBacc-eligible curriculum at 14-16 had a greater probability of progression to all post-16 educational outcomes, while the reverse was true for students taking an applied GCSE subject. There were no social class differences in the advantages of pursuing an EBacc-eligible curriculum. Curriculum differences did not explain the social class differences in post-16 progression, but an academic curriculum was equally valuable for working class as for middle-class pupils. Pursuing an EBacc-eligible curriculum particularly strongly increased the chances of girls and white young people staying in the educational pipeline, whereas applied subjects were particularly detrimental for girls. An EBacc-eligible curriculum at age 14-16 increased the chances of studying subjects preferred by Russell Group universities at A Level.

## Non-technical summary

The English educational policy landscape has changed rapidly over the last twenty years. New labour promoted choice and diversity in the curriculum by encouraging the introduction of new qualifications, including vocational GCSEs. However, the combination of the increase of GCSE qualifications with league tables of school performance led to concerns regarding schools, particularly those performing less well, maximising their performance by putting students in for 'soft' options. The subsequent conservative government reverted to a more traditional approach, advocating the English Baccalaureate (EBacc; core GCSE subjects in English, mathematics, history or geography, two sciences and a modern or ancient language) as the curriculum of choice for pupils aged 14-16. This paper examines the impact of the curriculum studied by pupils aged 14-16 on whether they continued in education post-16 and if so, what kind of 16-18 curriculum they pursued.

We characterise the 14-16 curriculum in two ways: EBacc-eligible and applied GCSE subjects. We consider post-16 progression to full time education, A Levels, and studying two or more facilitating subjects (thought to increase pupils' chances of accessing higher ranked universities) at A Level. We use data from a longitudinal survey of young people born 1989/90 in England, which is linked to administrative data on their academic attainment. While taking account of pupil's prior academic attainment and school characteristics, we investigate if socio-economic, gender and ethnic differences in post-16 transitions are accounted for by differences in the 14-16 curricula pursued by different groups of pupils.

We find that students pursuing an EBacc-eligible curriculum at 14-16 had a greater probability of progression to all post 16 educational outcomes, while taking an applied GCSE subject had the opposite effect. There were no social class differences in the advantages of pursuing an EBacc-eligible curriculum which suggests that an academically demanding curriculum is equally advantageous for working class as for middle class pupils. Pursuing an EBacc-eligible curriculum increased the chances of educational progression particularly strongly for girls and white young people, and studying an applied subject decreased the chances of girls staying on. In particular, studying an EBacc-eligible curriculum at age 14-16 increased the chances of studying subjects favoured by selective universities at A Level.

## Introduction

The 2002 Education Act, and the 2001 white paper 'Schools achieving success' (Department for Education and Skills, 2001) which preceded it, promoted choice and diversity in the curriculum. Stated aims were to 'break down the traditional prejudice against vocational education' and to encourage schools to provide 'a broader range of options, more suited to the individual student's needs' (p.33). The planned curricular diversity was to operate both within and between schools, so that the education system could 'cater significantly better for the diverse requirements and aspirations of today's young people' (Department for Education and Skills, 2001). Young people continued to study for GCSEs (General Certificate of Secondary Education), but numerous new qualifications were introduced, including vocational GCSEs. The subsequent Conservative government has moved to revert to a more traditional curriculum, which has also proved controversial. Amidst this rapidly changing policy landscape, an empirical assessment of the consequences of curriculum diversity at 14-16 on pupils' subsequent transitions is required.

This paper examines the impact of the curriculum studied by pupils aged 14-16 on whether they continued in education post-16, and if so, what kind of 16-18 curriculum they pursued. We consider post-16 progression to the following outcomes: 1. Full time education or training; 2: A levels (A levels remain the standard 'university-track' qualification in England)<sup>1</sup>; 3: A Level subjects which have been identified as highly valued by elite universities ('facilitating' subjects). This paper makes a novel contribution in a number of ways. Firstly, it examines the effect of choices during compulsory education, before young people are able to 'select out' of education. Therefore our sample of young people is heterogeneous and represents a wide student body. In addition, whereas previous literature has focused on participation in the individual GCSEs (Davies, Telhaj, Hutton, Adnett & Coe, 2008) this paper explores the association between the subjects chosen in combination and educational progression.

We use data from 'Next Steps', a study of 16,000 people born in England in 1989-90, linked to administrative education records (the National Pupil Database). The study began in 2004, when the cohort members were aged 13-14, which means that most of their compulsory education was spent under a Labour government. These young people's education experience was shaped by New Labour education policy which promoted diversity and flexibility in the 14-16 curriculum (Gillard, 2011).

The combination of the proliferation of GCSE and 'equivalent' qualifications with league tables of school performance led to concerns regarding schools maximising their performance at the benchmark 5 A\*-C Level by putting students in for 'soft' options, and avoiding more challenging subjects (Wolf, 2011). Institutional constraints are likely to be one factor determining students' curriculum 'choices', and there is evidence that schools that performed badly on the raw 5+ GCSE grade A\*-C

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<sup>1</sup> Although A levels are the most widely held qualification among 18 year old acceptances from the UK, there are other routes to university. A minority of 18 year olds in 2016 were also accepted holding (BTECs), and a combination of A levels and BTECs (UCAS, 2016).

measure moved most rapidly towards vocational courses and made the most substantial gains as a result (Jin, Muriel & Sibieta, 2011). Previous work suggests pupils' choices may be shaped by their school (Anders, Henderson, Moulton & Sullivan, 2017a).

Social class, gender and ethnic group influence the subjects taken at 14-16 and subsequently. Subject specialisms vary by ethnic group (Sullivan, Zimdars & Heath, 2010) but the consequences of this are under-researched. Gender segregation of curricula and qualifications has persisted despite girls' increased educational attainment. The vocational tracks typically pursued by working-class girls appear particularly limiting in terms of future prospects (Fuller, Beck & Unwin, 2005). Early stereotyped pathways may constrain future options in ways that the individual did not anticipate. This could include being ineligible to pursue certain subjects at A Level. Highly selective universities have indicated that they do not value all A Level subjects equally when it comes to university admissions (Russell Group, 2015/16).

Our previous work shows that individual 'choice' of 14-16 subjects was partly driven by socio-economic position, gender and ethnicity, and that school composition also plays a role (Henderson, Sullivan, Anders & Moulton, 2016). These results hold when we control for individual prior academic attainment, which suggests that subject 'choice' at age 14 could have a potential role in exacerbating inequalities, rather than simply reflecting advantages and disadvantages that were already apparent earlier in the school career (Henderson et al., 2016).

The question we address in this paper is what effect 14-16 subject 'choices' had on subsequent educational transitions. Did taking 'lower status' subjects have a direct influence on progression to post-16 education, and on access to those curricula and qualifications which in turn are likely to open the door to higher education?

## Literature Review

The existing literature shows that subject choice at age 16-18 matters for educational trajectories, income and social mobility (Chevalier, 2011; Dolton & Vignoles, 2002; Dilnot, 2016). Previous research has found that there are large differentials in subject choice by social background at GCSE (e.g. Henderson et al. 2016) and A Level (e.g. Dilnot, 2016). More specifically young people from higher socioeconomic backgrounds (SES) are more likely to take facilitating subjects (Rodeiro, 2007; Toth, Sammons & Sylva, 2015; and Dilnot, 2016). Moreover, there is a particular preference for maths and sciences among these higher SES groups (Gill & Bell, 2013; Gorard & See, 2009). These differences are partially explained by prior attainment at GCSE, but may also be related to GCSE subject choice, as early educational choices matter for later ones (Dilnot, 2016), in particular for access to higher status universities (Crawford, Dearden, Micklewright & Vignoles, 2017).

Facilitating subjects are important, given the strong-steer by the Russell Group about groups of preferred A level subjects, and because they are, on average, more difficult than non-facilitating subjects (Coe, Searle, Barmby, Jones & Higgins, 2008). Their

high status is related to their perceived value and difficulty. Dilnot (2017) has found that taking facilitating subjects at A Level is positively associated with getting a place at a higher status university and that taking maths A level is particularly advantageous. In addition Anders, Henderson, Moulton and Sullivan (2017b) has found that GCSE subject choice, in particular EBacc subjects, is important for university attendance and prestige of the university attended.

We examine the influence of both Ebacc-eligible and applied GCSEs on educational progression. Previous work has suggested that participation in applied subjects reduces the young person's chance of attending a Russell Group university (Vidal Rodeiro, Sutch & Zanini, 2013). However, advocates of applied subjects argue that they are more 'relevant' to working class pupils, and more likely to engage them with school, in which case we might expect working class pupils who take applied subjects to be more likely to stay on post-16, even if they are less likely to pursue a highly academic route. We examine whether any such differential benefit of applied subjects exists.

Gender segregation of curricula and qualifications has persisted despite girls' increased absolute educational attainment. Jonsson (1999) argues that gender differences may persist because boys perceive a relative advantage in technical subjects (such as engineering and sciences) while girls perceive a relative advantage in humanities subjects (e.g. languages). Stereotyping (Francis, 2000) and differential self-concept also play a role in subject choice (Sullivan, 2009). Much research in this area has focussed on girls' participation in STEM subjects (Codioli McMaster, 2017). Henderson et al. (2016) found that girls have lower odds of taking three or more STEM subjects and higher odds of taking Applied GCSEs compared to boys with the same level of prior attainment. Building on this work, we examine whether there are interactive gender differences in the association between GCSE curriculum choice and educational trajectories.

With respect to ethnic differences, there is some evidence of complex patterns for educational attainment and participation in certain subjects (Heath & Brinbaum, 2007; Rothon, 2005; Lessard-Phillips, 2009; Plewis, 2009; Heath, Rothon & Kilpi, 2008). More specifically Noden, Shiner and Modood (2014) argue that the qualifications taken by some minority ethnic groups disadvantage them in the university admissions process. However, there is, to our knowledge, no existing literature which examines the relationship between ethnicity and GCSE subject choice on educational trajectories.

## Research Questions

We characterise the 14-16 curriculum in two ways, based on prior work: English Baccalaureate (EBacc) eligible subjects and applied GCSE subjects.

We consider post-16 progression to the following outcomes: 1. Full time education; 2: A university-track curriculum (A Levels); 3: A Level subjects which have been identified as highly valued by elite universities ('facilitating' subjects).

- Does the 14-16 curriculum influence pupils' transitions at age 16?
- Does school composition influence age 16 transitions, either via the 14-16 curriculum, or over and above any such effect?
- Are social class, gender and ethnic differences in age-16 transitions accounted for to any degree by differences in the 14-16 curricula pursued by different groups of pupils?
- Are there interactions between social class, gender, ethnicity, and the 14-16 curriculum, i.e. did the effect of the curriculum studied on subsequent transitions vary for young people from different groups?

## Methods

### Participants

We use data from Next Steps (formerly the Longitudinal Study of Young People in England) which follows a cohort of children born in 1989/1990, resulting in seven waves of data. This cohort of young people can be linked with the National Pupil Database (NPD) which provides a census of children attending comprehensive schools in England. Next Steps began in 2004 when the sample members were aged between 13 and 14. Respondents were selected to be representative of young people in England using a stratified random sample, with oversampling for deprived schools. Schools were the primary sampling units, then children within schools. The two-stage sampling design that Next Steps uses presents a possible clustering effect due to between-school differences; therefore, all models are adjusted for the school clusters, sample design and attrition weights. As the NPD was used, along with school level data only comprehensive schools were included in the study.

At wave 4 (2007-2008) when the young people were aged 16-17, a total of 11,801 young people responded to the survey. We excluded those young people who did not report the subjects they chose at GCSE, or where Key Stage 3 (age 14 tests) and Key Stage 4 (national qualifications, usually GCSEs at age 16) scores were not available, or where there was no response to the relevant post-16 dependent variable data. There was also item non-response on some of the independent variables. Where available, responses for parental education, parental class and housing tenure were taken from the first available information given by respondents. We analyse three dependent variables, resulting in three analytic samples. Our first two analytic samples for the post-16 transitions were  $n=9,937$  for 'staying in full-time education', and  $n=9,920$  for 'studying A Levels'. These two samples represent all young people (allowing for aforementioned exclusions), but differed on response to the appropriate outcome variable. The third analytic sample was  $n=4,180$  for 'taking two or more facilitating subjects' at A Level, based on all young people who took AS Levels by subject derived from the appended NPD examination results. As such, the models considering whether individuals are taking two or more facilitating subjects should be interpreted as differences among those who pursued this more academic track.

## Measures

This study examines three post-16 transitions: *staying in full time education*, *studying A Levels* and *taking two or more facilitating subjects at A Level*. We assess the influence of the type of 14-16 curriculum on these educational transitions. Over three-quarters of the sample stayed in full-time education (77%), under a half (47%) studied A Levels, and of those students taking A Levels over a third (37%) took two or more facilitating subjects. *Staying in full-time education* was measured at wave 4 when the young people were in Year 12. A binary measure was created where the young person responded that they were 'going to school or college full-time', as opposed to all other post-16 transitions. As well as A Levels, these young people could be studying National Vocational Qualification's (NVQs), Business and Technology Education Courses (BTECs), City and Guilds and other vocational courses at school or Further Education (FE) colleges. *Studying A Levels* in Year 12 was also measured at wave 4. The *two or more facilitating subjects* post-16 outcome was constructed from the NPD Key Stage 5 (two years of education for students aged 16-18). *Facilitating subjects* include maths, English, biology, chemistry, physics, English literature, history, geography, modern and classical languages. The file contains a record of each examination taken by students at Key stage 5 and is appended to the Next Steps data on condition that the participant was still taking part in the Cohort study at wave 7. At the time, A Levels consisted of an examination at AS Level at the end of the first year (typically Year 12) and A2 level at the end of the second year (House of Commons Select Committee Education and Skills, 2003). For comparison purposes this study focuses on the post-16 transition to AS level. There are 4,779 participants with available AS level examination data. Facilitating subjects (previously known as 'hard subjects') were outlined by the Russell Group (RG<sup>2</sup>) of universities in their 'Informed Choices' guidance as A Level subjects which are most frequently required for application to university (Russell Group, 2015). 'Informed Choices' identifies four science subjects (biology, human biology, chemistry, physics), three mathematics (further mathematics, mathematics, pure mathematics), twenty modern languages and three classical languages (Latin, classical Greek, Hebrew) as well as English literature, geography and history as facilitating subjects. We include all the aforementioned subjects examined at AS level as facilitating subjects, with the exception of modern languages if it was a first language spoken at home.

The *age 14-16 curriculum* was characterised in two ways<sup>3</sup>: EBacc-eligible subjects and applied GCSEs (Henderson et al, 2016). The 14-16 curriculum was captured at wave 2 of Next steps (2005-6), when the young people had made their subject choices, but prior to taking their Key Stage 4 examinations. An *EBacc-eligible curriculum* consisted of studying core GCSE subjects in English, mathematics, history or geography, two sciences<sup>4</sup> and a modern or ancient language. In 2010,

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<sup>2</sup> At the time, an elite group of 20 research universities in the United Kingdom, now increased to 24 universities.

<sup>3</sup> Other types of age 14-16 curriculum were also analysed. The outcomes of young people following a facilitating or subject selective curriculum were broadly similar to the results shown in this study of pursuing an EBacc-eligible curriculum and are therefore not included in this paper.

<sup>4</sup> The two science subjects can either be in core and additional science GCSEs; or in GCSE double science award across all three major science subjects; or two single sciences in biology, chemistry, computer science or physics. However the Next Steps data does not include a measure of computer science.

EBacc was introduced as a performance measure (achieved by gaining a C grade or above in all of the core subjects). Our measure of an EBacc-eligible curriculum is binary, simply reflecting whether this set of subjects was studied or not. The EBacc-eligible curriculum represents a broad set of subjects and skills and previous research has shown that this overlaps with both selective subjects and facilitating subjects (see Henderson et al, 2016).

In 2002, the following eight vocational subjects were introduced to the GCSE curriculum: applied art and design, applied business, engineering, health and social care, applied ICT, leisure and tourism, manufacturing, and applied science. A binary measure was created where at least one applied subject was taken at GCSE, as opposed to no applied GCSEs. We also conducted supplementary analysis (available on request) using a binary variable comparing pupils who took two or more applied subjects (11.2%) compared to one or none (88.8%). The results were broadly similar to the applied subjects' variable analysed in the paper, although there were some differences in the transition to taking two or more facilitating subjects, outlined in the results section.

We use the first four waves of Next Steps to capture the individual and family characteristics of social class, parental education, equivalised permanent income, housing tenure, ethnicity, gender, and special educational needs (SEN). *Social class* is measured using the three-category National Statistics Socio Economic Classification (NS-SEC), which consists of managerial and professional occupations, intermediate occupations, and routine and manual occupations (Rose & Pevalin, 2005). The measure of equivalised permanent income is derived by taking an average of the household income over the first four waves of Next Steps and dividing by the square root of the household size. Previous work shows that permanent household income is more highly related to young people's educational outcomes than current income (Jenkins & Schluter, 2002). Young people's attainment was measured using their individual capped Key Stage 4 scores from the NPD. The scores were standardised, with a mean of zero and a standard of deviation of one. Finally, school characteristics included in the study were grammar school status, average class size, the proportion of young people eligible for free school meals (FSM) in the school and whether the school was single-sex or not.

## Analytic approach

We first examined the proportion of young people taking EBacc-eligible or an applied subject and then the different post-16 transitions by gender, class and ethnicity. Then, for each of the post-16 transitions we fitted a series of multiple logistic regression models. We present changes in predicted probabilities set at the average sample characteristics (known as marginal effects at means) to aid interpretation. The first model regressed these outcomes on the young person's individual and family characteristics. We then added the different types of 14-16 curriculum pursued to assess whether curriculum choices influenced pupils' transitions at age 16. We also examined whether including the 14-16 curriculum accounted for any differences in age-16 transitions by different groups of pupils. The next models included school characteristics, to assess whether the composition of the school influenced age 16 transitions, either via the 14-16 curriculum, or over and above any such effect. The

final models adjusted for attainment at Key Stage 4 to establish if 14-16 curriculum influences remained after accounting for attainment and all the other covariates. Since the examinations young people sit at age 16 are influenced by the subjects they study, we acknowledge that attainment at Key Stage 4 may well have been shaped by this. This raises concerns for including this measure in our models, however, there is no contemporary measure of attainment which would not be affected by curriculum. To check our findings we conducted further analysis, using earlier measures of attainment at age 14 (Key Stage 3) and at age 11 (Key Stage 2), before subject choices were made. Nevertheless including earlier attainment measures in our models will be less predictive of post-16 transitions and therefore raises alternative concerns. Nevertheless, we find that using Key Stage 3 attainment makes almost no difference to our results, while using Key Stage 2 attainment makes only a small difference. Hence we retain models including Key Stage 4 attainment, as our primary models. To test for gender, class and ethnic<sup>5</sup> differences in the 'effects' of the 14-16 curriculum on post-16 transactions we included two-way interaction terms in the final models (accounting for all the covariates). All models were estimated using Next Steps sample design (taking account of over-sampling of certain groups) and non-response weights.

## Results

### Descriptives

Table 1 shows the proportion of students by type of curriculum studied at age 14-16, broken down by social class, gender and ethnic group. Just over a quarter of pupils (26.8%), were EBacc-eligible through their GCSE subject choices, while 47.2% took one or more applied subjects. In this bivariate analysis, there were no gender differences, however, strong class and ethnic differences are apparent. Students from the routine class were less likely to be studying EBacc-eligible subjects compared to students from both the intermediate and managerial classes. In contrast, students from the lower class (55.2%) were more likely to be studying at least one applied subject, compared to the intermediate (48.9%) and managerial (37.4%) classes. Black Caribbean, Bangladeshi and black African students were less likely to be studying all the EBacc-eligible subjects compared to Indian and white students. Students from black Caribbean, Bangladeshi, Pakistani and white backgrounds were more likely to take an applied subject than students from the other ethnic backgrounds. Finally, only a few (6.6%) young people were pursuing both an EBacc-eligible curriculum and taking an applied GCSE subject, while just under a third (32.5%) were taking neither.

**Table 1: Proportion of young people taking EBacc-eligible or applied subjects at 14-16 by gender, class and ethnicity (weighted)**

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<sup>5</sup> In the models including interactions, the sample sizes for some of the ethnic group categories were very small (or empty), therefore ethnicity was measured as a dichotomous variable where white was compared to all other ethnic groups.

	Ebac Total	CI	Applied Total	CI
<b>Total %</b>	26.81	[24.91-28.79]	47.24	[45.17-49.32]
<b><u>Gender</u></b>				
Male %	26.43	[24.12-28.88]	45.15	[42.76-47.55]
Female %	27.18	[25.01-29.47]	49.30	[46.79-51.81]
<b><u>Class</u></b>				
Managerial %	39.81	[37.06-42.62]	37.35	[34.72-40.07]
Intermediate %	24.78	[22.59-27.11]	48.93	[46.14-51.73]
Routine %	16.29	[14.54-18.20]	55.15	[52.70-57.58]
<b><u>Ethnicity</u></b>				
White %	27.15	[25.12-29.27]	47.26	[45.02-49.51]
Mixed %	24.98	[20.05-30.66]	46.50	[39.99-53.14]
Indian %	30.49	[24.74-36.92]	46.86	[41.86-51.93]
Pakistani %	27.01	[21.85-32.87]	53.84	[48.58-59.02]
Bangladeshi %	16.79	[12.15-22.75]	55.91	[48.68-62.90]
Black Caribbean %	15.23	[11.24-20.31]	51.22	[43.75-59.63]
Black African %	18.76	[14.31-24.20]	48.91	[42.10-55.75]
Other %	30.31	[24.06-37.38]	35.51	[28.80-42.83]
Observations	9,937		9,937	

**Source:** EUL, First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

As shown in Table 2, over three-quarters of the sample stayed in full-time education (77.0%) and under a half (47.1%) studied A Levels.

Table 2: Post-16 transitions by gender, class and ethnicity (weighted)

	Full-time education		A Levels		Two or more facilitating subjects	
	Total	CI	Total	CI	Total	CI
<b>Total %</b>	77.03	[70.08-72.80]	47.11	[45.32-48.91]	37.14	[34.76-39.58]
<b>Gender</b>						
Male %	66.55	[64.59-68.46]	42.41	[40.09-44.77]	39.69	[36.47-43.01]
Female %	76.28	[74.66-77.84]	51.74	[49.58-53.90]	35.07	[32.23-38.02]
<b>Class</b>						
Managerial %	82.22	[80.62-83.72]	64.92	[62.67-67.09]	42.84	[39.69-46.05]
Intermediate %	67.88	[65.54-70.04]	44.38	[42.11-46.67]	33.85	[30.32-37.56]
Routine %	63.70	[61.53-65.81]	32.15	[30.20-34.17]	29.21	[25.84-32.83]
<b>Ethnicity</b>						
White %	69.02	[67.51-70.48]	45.33	[43.39-47.29]	37.33	[34.69-40.05]
Mixed %	74.10	[67.83-79.53]	48.24	[42.45-54.07]	39.51	[31.31-48.35]
Indian %	92.97	[90.35-94.92]	72.31	[67.12-76.97]	34.95	[29.15-41.23]
Pakistani %	85.35	[81.28-88.65]	53.56	[48.31-58.72]	35.17	[28.46-42.53]
Bangladeshi %	85.75	[79.22-90.49]	59.92	[53.31-66.18]	27.70	[21.42-34.99]
Black Caribbean %	82.35	[75.95-87.33]	43.38	[36.58-50.44]	18.62	[10.68-30.47]
Black African %	96.01	[92.82-97.81]	63.14	[56.29-69.50]	30.89	[22.29-41.05]
Other %	87.98	[81.82-92.25]	62.36	[55.61-68.66]	48.32	[38.79-57.97]
Observations	9,937		9,920		4,180 <sup>6</sup>	

**Source:** Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

Of those students taking exams at AS Level over a third (37.1%) took two or more facilitating subjects. Girls and young people from the managerial class were more likely to be in full-time education and studying A Levels post-16 than boys and the lower classes respectively. Also, young people from the routine class were less likely to be studying A Levels at age 16 than young people from the intermediate class. Young people from white ethnic backgrounds were less likely to be in full-time education and studying A Levels than those from Indian, Pakistani, Bangladeshi, black African, and other ethnic backgrounds. Of the students who took AS-Level examinations, there were no significant gender differences in students taking two or more facilitating subjects. However, students from the managerial class were more likely to take two or more facilitating subjects at AS-Level than students from the intermediate or routine classes. Black Caribbean students were less likely to have taken two or more facilitating AS-Levels than students from white, mixed and other ethnic backgrounds.

### Transition to full-time education post-16

Table 3 presents the models for students' progression to full-time education post-16. Not surprisingly parental background (model 1) was associated with individuals' transitions to full-time education. Young people from more disadvantaged backgrounds had a lower probability of being in full-time education post-16, than their more advantaged peers. There were also gender and ethnic differences in staying in education post-16. Girls were ten percentage points more likely than boys to be in

<sup>6</sup> Base: All taking AS levels and NPD Key Stage 5 available (responded to Next Steps in wave 7).

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full-time education at age 16. White students had a substantially lower probability of being in full-time education compared to students from all other ethnic groups – whites were 16 percentage points less likely to stay on in education post-16 compared to black Caribbean students, and the gap was even wider with all other ethnic minorities.

Table 3: Logistic regression predicting full-time education post 16 (marginal effects at means)

	Family and Individual		14-16 curriculum		School composition		Attainment: Key Stage 4			
	Model 1	EBacc Model 2	Applied Model 3	EBacc Model 4	Applied Model 5	EBacc Model 6	Applied Model 7			
<b>Family characteristics</b>										
<b>ref: Managerial</b>										
Intermediate	-0.05** (0.02)	-0.04** (0.02)	-0.05** (0.02)	-0.04** (0.02)	-0.05** (0.02)	-0.03+ (0.02)	-0.03+ (0.02)	-0.03+ (0.02)	-0.03+ (0.02)	-0.03+ (0.02)
Routine	-0.05** (0.02)	-0.04* (0.02)	-0.05** (0.02)	-0.04* (0.02)	-0.04* (0.02)	0.00 (0.02)	0.00 (0.02)	0.00 (0.02)	0.00 (0.02)	0.00 (0.02)
<b>ref: Degree or equivalent</b>										
Other HE qualification	-0.10*** (0.02)	-0.09*** (0.02)	-0.10*** (0.02)	-0.09*** (0.02)	-0.09*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)
A Level	-0.08*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)	-0.08*** (0.02)	-0.05** (0.02)	-0.05** (0.02)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.02)
GCSE A-C	-0.20*** (0.01)	-0.18*** (0.01)	-0.19*** (0.01)	-0.18*** (0.01)	-0.18*** (0.01)	-0.13*** (0.02)	-0.13*** (0.02)	-0.14*** (0.02)	-0.14*** (0.02)	-0.14*** (0.02)
Level 1 and below	-0.20*** (0.02)	-0.18*** (0.02)	-0.19*** (0.02)	-0.17*** (0.02)	-0.18*** (0.02)	-0.09*** (0.02)	-0.09*** (0.02)	-0.10*** (0.02)	-0.10*** (0.02)	-0.10*** (0.02)
<b>Household income (per £10,000)</b>	0.03*** (0.01)	0.02** (0.01)	0.03*** (0.01)	0.02** (0.01)	0.03** (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
<b>ref: Owns Property</b>										
Rent/other	-0.09*** (0.01)	-0.08*** (0.01)	-0.09*** (0.01)	-0.07*** (0.01)	-0.08*** (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
<b>Individual characteristics</b>										
<b>Ref: White</b>										
Mixed	0.05+ (0.03)	0.06+ (0.03)	0.05+ (0.03)	0.06+ (0.03)	0.06+ (0.03)	0.05+ (0.03)	0.05+ (0.03)	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)
Indian	0.23*** (0.01)	0.23*** (0.01)	0.23*** (0.01)	0.22*** (0.01)	0.23*** (0.01)	0.20*** (0.01)	0.20*** (0.01)	0.20*** (0.01)	0.20*** (0.01)	0.20*** (0.01)
Pakistani	0.19*** (0.01)	0.18*** (0.01)	0.19*** (0.01)	0.19*** (0.01)	0.20*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.18*** (0.01)
Bangladeshi	0.21*** (0.02)	0.21*** (0.02)	0.21*** (0.02)	0.21*** (0.02)	0.22*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)
Black Caribbean	0.16*** (0.03)	0.16*** (0.02)	0.16*** (0.03)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)
Black African	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)	0.26*** (0.01)	0.24*** (0.01)	0.24*** (0.01)	0.24*** (0.01)	0.24*** (0.01)	0.24*** (0.01)
Other	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)
<b>Ref: Male</b>										
Female	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
<b>Special Education Needs</b>	-0.06** (0.02)	-0.04+ (0.02)	-0.05** (0.02)	-0.03+ (0.02)	-0.05* (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.16*** (0.02)
<b>14-16 curriculum</b>										
EBacc-eligible		0.16*** (0.01)		0.14*** (0.01)		0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
One or more applied			-0.08*** (0.01)			-0.07*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)	-0.04*** (0.01)
<b>School characteristics</b>										
<b>ref: Comprehensive school</b>										
Grammar school					0.16*** (0.02)	0.17*** (0.02)	0.09*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)
<b>ref: Co-ed</b>										
Single sex school					0.03 (0.02)	0.03 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
<b>Average class size (SD)</b>					-0.00 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
<b>% FSM in school (SD)</b>					-0.01+ (0.01)	-0.02** (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
<b>Attainment</b>										
Key Stage 4							0.19*** (0.01)	0.19*** (0.01)	0.19*** (0.01)	0.19*** (0.01)
Observations	9,937	9,937	9,937	9,937	9,937	9,937	9,937	9,937	9,937	9,937

Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

NOTE: All predictors are set at the mean value. Source: Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

Models 2 and 3 take account of the type of curriculum the student pursued at age 14-16. If a student followed an EBacc-eligible curriculum they had a 16 percentage point higher probability (model 2) of being in full-time education than if they were following a non-EBacc-eligible route. Including an applied subject in their subject choice reduced the students' chances of being in full-time education at age 16 by 8 percentage points (model 3). Although the curriculum influenced whether the individual was in full-time education or not, the type of curriculum students pursued did not explain the social class, gender and ethnic differences in staying in full-time education at age 16.

Models 4 and 5 adjust for: school type, single-sex school, size of class and the percentage of students in the school with FSM. Students attending a grammar school had a 16% points (17% points for applied) increased chance of being in full-time education than those in a comprehensive school. None of the other school characteristic variables were significant at the 5% level. The inclusion of the school characteristics did not explain the differential chances of the individual being in full-time education according to their family and individual characteristics, nor did they greatly explain the influence of the 14-16 curriculum on staying in full-time education post-16.

The final models (6 and 7) adjust for attainment at Key Stage 4, noting the important caveats outlined in the analytic approach. Unsurprisingly prior attainment was influential in determining the transition to full-time education post-16. Once prior attainment is taken into account, social class, parental income, and housing tenure were no longer significant at the five percent level, while significant differences remained for gender, ethnicity, parental education, and school type. After adjusting for all the covariates, students following an EBacc-eligible curriculum were seven percentage points more likely to be in full-time education post-16 than students not studying all the EBacc subjects. In contrast, studying any applied subject at age 14-16 was related to a reduction of four percentage points in the probability of continuing in full-time education post 16.

We ran further models including interaction terms for class, gender and ethnicity, and the two types of 14-16 curriculum. Table 4 shows the predicted probability and the average marginal effect at the mean of staying in full-time education for young people pursuing an EBacc-eligible curriculum or an applied subject by their gender, class and ethnicity.

**Table 4: Interactive effects on probability of staying in full-time education at age 16 by gender, class and ethnicity and 14-16 curriculum**  
(Predicted probabilities and marginal effects at means of following an EBacc-eligible curriculum or taking applied subjects)

	EBacc		Eligible			Applied				
	Not eligible PP	SE	PP	SE	Margin	Not studied PP	SE	Studied PP	SE	Margin
<b><u>Gender*curriculum</u></b>										
Male	0.68	(0.01)	0.72	(0.01)	0.04**	0.70	(0.01)	0.67	(0.01)	-0.03*
Female	0.73	(0.01)	0.81	(0.01)	0.08***	0.77	(0.01)	0.73	(0.01)	-0.04**
<b><u>Class*curriculum</u></b>										
Managerial	0.70	(0.01)	0.79	(0.02)	0.09***	0.75	(0.02)	0.70	(0.02)	-0.05*
Intermediate	0.68	(0.01)	0.75	(0.02)	0.07***	0.72	(0.01)	0.67	(0.01)	-0.05*
Routine	0.71	(0.01)	0.75	(0.01)	0.04*	0.74	(0.01)	0.71	(0.01)	-0.03*
<b><u>Ethnicity*curriculum</u></b>										
White	0.68	(0.01)	0.74	(0.01)	0.06***	0.71	(0.01)	0.67	(0.01)	0.04***
Non-white	0.85	(0.01)	0.87	(0.02)	0.02	0.87	(0.01)	0.85	(0.01)	-0.02
Observations	9,937					9,937				

Controlling for parental education, income, housing tenure, SEN, school characteristics, Key stage 4

Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**NOTE:** Reporting marginal effects with all other predictors set at the mean values

Source: Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

For both boys and girls and students from different social class backgrounds studying an EBacc-eligible curriculum increased students' chances of being in full time education at 16, while including an applied subject reduced this chance. However, studying for EBacc subjects appeared to make more difference to girls than to boys (though this only holds at the 10% significance level  $\chi^2=2.84$ ,  $P<.10$ ). If girls pursued an EBacc-eligible curriculum their chances increased by 8% points, while the probability increase for boys was lower at 4% points. There were also differences by ethnicity. White students had a greater chance of staying in full-time education (by six percentage points) if they pursued an EBacc-eligible curriculum than if they had not, while the probability was reduced by 4% points if they included an applied GCSE in their subject choice at age 14-16. Studying for an EBacc-eligible curriculum appeared to increase the chances of white students being in full time education post-16 more than for non-whites (but only at the 10% significance level,  $\chi^2=3.73$ ,  $P<.10$ ). There were no significant differences by social class

### University-track curriculum (A Levels)

Table 5 presents the models for students' taking A levels post-16. As with staying in full-time education, parental background (model 1) was associated with studying A Levels. Students from more disadvantaged backgrounds had a lower probability of studying A Levels post-16, than their more advantaged peers. There were also gender and ethnic differences. Girls were 10% points more likely than boys to study A Levels, while white students had a lower probability of studying A Levels than

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Bangladeshi, Indian, black African, Pakistani young people and those from other ethnic backgrounds.

Table 5: Logistic regression predicting studying A Levels at age 16 (marginal effects at means)

	Family and Individual		14-16 curriculum		Applied		School composition		Applied		Attainment: Key Stage 4		Applied	
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
<b>Family characteristics</b>														
<b>ref: Managerial</b>														
Intermediate	-0.04*	(0.02)	-0.04+	(0.02)	-0.04*	(0.02)	-0.04*	(0.02)	-0.04*	(0.02)	0.01	(0.02)	0.01	(0.02)
Routine	-0.09***	(0.02)	-0.07***	(0.02)	-0.08***	(0.02)	-0.06**	(0.02)	-0.07***	(0.02)	0.01	(0.02)	0.01	(0.02)
<b>ref: Degree or equivalent</b>														
Other HE qualification	-0.16***	(0.02)	-0.15***	(0.02)	-0.15***	(0.02)	-0.14***	(0.02)	-0.15***	(0.02)	-0.08**	(0.03)	-0.08**	(0.03)
A Level	-0.16***	(0.02)	-0.16***	(0.03)	-0.16***	(0.02)	-0.15***	(0.03)	-0.15***	(0.02)	-0.09**	(0.03)	-0.09**	(0.03)
GCSE A-C	-0.31***	(0.02)	-0.28***	(0.02)	-0.29***	(0.02)	-0.28***	(0.02)	-0.28***	(0.02)	-0.16***	(0.02)	-0.16***	(0.02)
Level 1 and below	-0.31***	(0.02)	-0.28***	(0.02)	-0.29***	(0.02)	-0.26***	(0.02)	-0.27***	(0.02)	-0.10**	(0.03)	-0.10***	(0.03)
<b>Household income (per £10,000)</b>	0.07***	(0.01)	0.06***	(0.01)	0.07***	(0.01)	0.06***	(0.01)	0.06***	(0.01)	0.02	(0.01)	0.02	(0.01)
<b>ref: Owns Property outright/mortgage</b>														
Rent/other	-0.15***	(0.02)	-0.14***	(0.02)	-0.15***	(0.02)	-0.13***	(0.02)	-0.13***	(0.02)	-0.01	(0.02)	-0.01	(0.02)
<b>Individual characteristics</b>														
<b>Ref: White</b>														
Mixed	0.03	(0.04)	0.04	(0.04)	0.03	(0.04)	0.05	(0.04)	0.05	(0.04)	0.05	(0.04)	0.05	(0.04)
Indian	0.31***	(0.03)	0.32***	(0.03)	0.32***	(0.03)	0.33***	(0.03)	0.33***	(0.03)	0.30***	(0.04)	0.31***	(0.04)
Pakistani	0.20***	(0.03)	0.19***	(0.03)	0.21***	(0.03)	0.24***	(0.03)	0.26***	(0.03)	0.34***	(0.04)	0.35***	(0.04)
Bangladeshi	0.33***	(0.03)	0.33***	(0.03)	0.33***	(0.03)	0.39***	(0.02)	0.41***	(0.02)	0.39***	(0.04)	0.39***	(0.04)
Black Caribbean	0.06	(0.04)	0.09*	(0.04)	0.06	(0.04)	0.12**	(0.04)	0.11**	(0.04)	0.21***	(0.05)	0.20***	(0.05)
Black African	0.28***	(0.04)	0.29***	(0.03)	0.28***	(0.04)	0.33***	(0.03)	0.34***	(0.03)	0.38***	(0.05)	0.38***	(0.05)
Other	0.28***	(0.03)	0.27***	(0.03)	0.25***	(0.03)	0.28***	(0.03)	0.28***	(0.04)	0.25***	(0.06)	0.25***	(0.06)
<b>Ref: Male</b>														
Female	0.10***	(0.01)	0.11***	(0.01)	0.11***	(0.01)	0.12***	(0.01)	0.12***	(0.01)	0.05***	(0.01)	0.05***	(0.01)
<b>Special Education Needs</b>														
	-0.40***	(0.03)	-0.36***	(0.03)	-0.39***	(0.03)	-0.36***	(0.03)	-0.39***	(0.03)	-0.03	(0.04)	-0.03	(0.04)
<b>14-16 curriculum</b>														
EBacc-eligible			0.29***	(0.02)			0.26***	(0.02)			0.10***	(0.02)		
One or more applied					-0.16***	(0.01)			-0.14***	(0.01)			-0.06***	(0.01)
<b>School characteristics</b>														
<b>ref: Comprehensive school</b>														
Grammar school							0.35***	(0.03)	0.37***	(0.03)	0.10*	(0.04)	0.10*	(0.04)
<b>ref: Co-ed</b>														
Single sex school							0.05	(0.03)	0.05	(0.03)	0.03	(0.03)	0.03	(0.03)
<b>Average class size (SD)</b>							-0.04***	(0.01)	-0.04***	(0.01)	-0.04***	(0.01)	-0.04***	(0.01)
<b>% FSM in school (SD)</b>							-0.05***	(0.01)	-0.07***	(0.01)	-0.02+	(0.01)	-0.03*	(0.01)
<b>Attainment</b>														
Key Stage 4											0.64***	(0.02)	0.64***	(0.02)
Observations	9,920		9,920		9,920		9,920		9,920		9,920		9,920	

Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

NOTE: Reporting marginal effects with all other predictors set at their mean values. Source: Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

Model 2 shows that following an EBacc-eligible curriculum at age 14-16 increased the student's chances of studying A Levels by 29 percentage points. Model 3 shows that including one applied subject or more in their subject choice reduced the probability by 16 percentage points. As with staying in full-time education, the 14-16 curriculum influenced the young persons' post-16 transition, but it did not explain the social class and gender differences. This was also mainly true of ethnic differences, although compared to white students if black Caribbean students followed an EBacc-eligible curriculum they were significantly more likely to be studying A Levels. However, the next models show the students' school and in particular attainment better explained these ethnic differences, suggesting that type of curriculum studied may in part be a proxy for previous attainment.

Models 4 and 5 accounted for school characteristics. Students attending a grammar school, as opposed to a comprehensive school had a 35 – 37 percentage point (depending on the curriculum followed) greater chance of studying A Levels post-16. In addition, attending a school with smaller class sizes and a lower proportion of FSM students increased the chances of studying A Levels. However, the inclusion of school characteristics did not change the probability of studying A Levels by family and individual characteristics, neither did they substantially explain the influence of the 14-16 curriculum on the young person's transition to A Levels.

Models 6 and 7 account for students' attainment at Key Stage 4. Prior attainment is the most important predictor in these models and accounts for some of the family and individual level, as well as school characteristics. Income, housing tenure and of particular interest social class were no longer significant predictors of the transition to A Levels and attainment also partly explained differences in the chances of studying A Levels by parental education, young people's SEN and gender, as well as type of school and proportion of FSM eligible students. Also, Pakistani and black Caribbean compared to white students had a greater chance of studying A Levels once Key Stage 4 attainment was accounted for. In the final models, students pursuing an EBacc-eligible curriculum had a greater chance (by ten percentage points) of studying A Levels, whereas choosing an applied GCSE subject led to a 6 percentage point decrease in the probability of studying A levels.

Table 6 shows, the predicted probability of studying A Levels for young people pursuing different types of curriculum by their gender, class and ethnicity (after taking other individual, family and school characteristics into account). On average, both boys and girls had a greater chance of studying A Levels if they had previously pursued an EBacc-eligible curriculum. Unlike boys however, if girls studied an applied subject they had a significantly lower probability of studying A Levels at age 16 ( $\chi^2=4.85$ ,  $P<.05$ ). In the main the influence of the 14-16 curriculum on studying A Levels was similar across the three social classes.

**Table 6: Interactive effects on probability of taking A Levels at age 16 by gender, class and ethnicity and 14-16 curriculum**  
(Predicted probabilities and marginal effects at means of following an EBacc-eligible curriculum or taking applied subjects)

	EBacc		Eligible		Margin	Applied		Studied		Margin
	Not eligible	SE	PP	SE		Not studied	SE	PP	SE	
<b>Gender*curriculum</b>										
Male	0.45	(0.01)	0.49	(0.01)	0.04***	0.46	(0.01)	0.45	(0.01)	-0.02
Female	0.47	(0.01)	0.53	(0.01)	0.06***	0.51	(0.01)	0.46	(0.01)	-0.05***
<b>Class*curriculum</b>										
Managerial	0.45	(0.01)	0.51	(0.02)	0.06***	0.49	(0.01)	0.44	(0.01)	-0.05**
Intermediate	0.46	(0.01)	0.50	(0.01)	0.04**	0.48	(0.01)	0.46	(0.01)	-0.02
Routine	0.46	(0.01)	0.51	(0.01)	0.05***	0.49	(0.01)	0.46	(0.01)	-0.03**
<b>Ethnicity*curriculum</b>										
White	0.44	(0.01)	0.50	(0.01)	0.06***	0.47	(0.01)	0.43	(0.01)	-0.03***
Non-white	0.58	(0.01)	0.59	(0.01)	0.01	0.59	(0.01)	0.58	(0.01)	-0.01
Observations	9,920					9,920				

Controlling for parental education, income, housing tenure, SEN, school characteristics, Key stage 4

Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**NOTE:** Reporting marginal effects with all other predictors set at their mean values

**Source:** Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

There were differences in the chances of studying A Levels by ethnic background and type of 14-16 curriculum. The probability of studying A Levels was six percentage points greater for young people from white ethnic backgrounds if they pursued an EBacc-eligible curriculum than if they had not, and three percentage points if they had pursued an applied subject compared to no applied subjects. In contrast, the choice of curriculum made no difference to the chances of non-white students studying A Levels. White pupils had a significantly higher probability of studying A levels, compared to non-white pupils if they followed an EBacc-eligible curriculum ( $\chi^2=4.74$ ,  $P<.05$ ).

## Two or more facilitating subjects at A Level

The models in table 7 compare students who took examinations in two or more facilitating subjects at AS Level (as recorded in the NPD), with those who took one or no facilitating subjects. In model 1, students from the higher compared to the routine class, and with more highly educated parents and parents who owned their own homes had a higher probability of taking facilitating subjects at A Level. Black Caribbean students had a 16 percentage point lower chance and the 'other' ethnic group a 14 percentage point greater chance of studying facilitating subjects than white students. Girls were four percentage points less likely than boys to take two or more facilitating subjects at A Level.

Table 7: Logistic regression predicting students taking two or more facilitating subjects at AS level (marginal effects at means)

	Family and Individual		14-16 curriculum		Applied		School composition		Applied		Attainment: Key Stage 4			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
<u>Family characteristics</u>														
<b>ref: Managerial</b>														
Intermediate	-0.02	(0.03)	-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.03)	-0.01	(0.03)	0.02	(0.03)	0.01	(0.03)
Routine	-0.06*	(0.03)	-0.05*	(0.03)	-0.06*	(0.03)	-0.05+	(0.03)	-0.05*	(0.03)	-0.03	(0.03)	-0.04	(0.03)
<b>ref: Degree or equivalent</b>														
Other HE qualification	-0.11***	(0.03)	-0.10***	(0.03)	-0.11***	(0.03)	-0.10***	(0.03)	-0.10***	(0.03)	-0.04	(0.03)	-0.04	(0.03)
A Level	-0.13***	(0.03)	-0.12***	(0.03)	-0.12***	(0.03)	-0.12***	(0.03)	-0.12***	(0.03)	-0.08*	(0.03)	-0.08*	(0.03)
GCSE A-C	-0.14***	(0.03)	-0.12***	(0.03)	-0.12***	(0.03)	-0.11***	(0.03)	-0.11***	(0.02)	-0.02	(0.03)	-0.02	(0.03)
Level 1 and below	-0.08*	(0.03)	-0.06	(0.04)	-0.07*	(0.04)	-0.05	(0.04)	-0.06	(0.04)	-0.02	(0.04)	-0.02	(0.04)
<b>Household income (per £10,000)</b>														
ref: Owns Property outright/mortgage	-0.00	(0.01)	-0.01	(0.01)	-0.00	(0.01)	-0.01	(0.01)	-0.00	(0.01)	-0.02+	(0.01)	-0.02+	(0.01)
Rent/other	-0.08**	(0.03)	-0.07*	(0.03)	-0.07**	(0.03)	-0.06*	(0.03)	-0.06*	(0.03)	-0.03	(0.03)	-0.04	(0.03)
<u>Individual characteristics</u>														
<b>Ref: White</b>														
Mixed	0.01	(0.04)	0.03	(0.04)	0.01	(0.04)	0.03	(0.04)	0.02	(0.05)	0.03	(0.05)	0.02	(0.05)
Indian	-0.01	(0.03)	-0.00	(0.04)	-0.00	(0.04)	0.00	(0.04)	0.00	(0.04)	-0.01	(0.04)	-0.00	(0.04)
Pakistani	0.00	(0.04)	0.01	(0.04)	0.02	(0.04)	0.01	(0.05)	0.04	(0.05)	0.08	(0.05)	0.10+	(0.06)
Bangladeshi	-0.04	(0.05)	-0.02	(0.05)	-0.03	(0.05)	-0.02	(0.06)	-0.01	(0.06)	-0.03	(0.06)	-0.02	(0.06)
Black Caribbean	-0.16**	(0.06)	-0.14*	(0.06)	-0.15*	(0.06)	-0.13*	(0.06)	-0.14*	(0.06)	-0.07	(0.08)	-0.07	(0.09)
Black African	-0.04	(0.05)	-0.02	(0.06)	-0.03	(0.05)	-0.02	(0.06)	-0.02	(0.06)	0.01	(0.07)	0.01	(0.07)
Other	0.14**	(0.05)	0.15**	(0.05)	0.14**	(0.05)	0.15**	(0.06)	0.15**	(0.06)	0.15*	(0.06)	0.16*	(0.07)
<b>Ref: Male</b>														
Female	-0.04*	(0.02)	-0.04*	(0.02)	-0.04*	(0.02)	-0.03+	(0.02)	-0.03+	(0.02)	-0.09***	(0.02)	-0.09***	(0.02)
<b>Special Education Needs</b>														
	-0.18**	(0.06)	-0.16**	(0.06)	-0.18**	(0.06)	-0.16**	(0.06)	-0.17**	(0.05)	-0.10	(0.06)	-0.11+	(0.06)
<u>14-16 curriculum</u>														
EBacc-eligible			0.20***	(0.02)			0.19***	(0.02)			0.13***	(0.02)		
One or more applied					-0.13***	(0.02)			-0.12***	(0.02)			-0.07***	(0.02)
<u>School characteristics</u>														
<b>ref: Comprehensive school</b>														
Grammar school							0.17*	(0.08)	0.19*	(0.08)	0.01	(0.08)	0.02	(0.08)
<b>ref: Co-ed</b>														
Single sex school							-0.06	(0.05)	-0.06	(0.05)	-0.08	(0.05)	-0.08	(0.05)
<b>Average class size (SD)</b>														
							0.01	(0.01)	0.02	(0.01)	0.00	(0.01)	0.01	(0.01)
<b>% FSM in school (SD)</b>														
							0.00	(0.02)	-0.01	(0.02)	0.02	(0.02)	0.01	(0.02)
<u>Attainment</u>														
<b>Key Stage 4</b>														
Observations	4,180		4,180		4,180		4,180		4,180		0.48***	(0.03)	0.49***	(0.03)

Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

NOTE: Reporting marginal effects with all other predictors set at their mean values. Source: Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

Students taking an EBacc-eligible curriculum (model 2) had a 20 percentage point greater probability of taking two or more facilitating A Levels. In contrast, students taking any applied subjects (model 3) had a 13 percentage point lower chance of pursuing two or more facilitating subjects post age 16. Although the type of curriculum influenced the transition to facilitating A Level subjects, the 14-16 curriculum did not explain any of the social class, gender or ethnic differences. Models 4 and 5 adjusted for school composition. Students attending a grammar school, as opposed to a comprehensive school had a greater chance of studying two or more facilitating subjects. However, none of the other school predictors were significant at the five percent level. Accounting for school characteristics did not change the probability of taking two facilitating A Level subjects by class, gender or ethnicity. Neither did it substantially explain the influence of the 14-16 curriculum on post-16 transitions.

As previously, prior attainment was the most influential factor in these models, social class, housing tenure, students with SEN and school type were no longer significant predictors of studying facilitating subjects at A Level once this was taken into account. Over and above prior attainment, boys and students from the 'other' ethnic group had a greater chance of taking facilitating subjects. Although prior attainment partly explained the influence of the 14-16 curriculum on taking facilitating A Level subjects, students' prior curriculum choices were important. Students following an EBacc-eligible curriculum had a 13 percentage point higher probability of taking facilitating subjects, while studying applied subjects was related to a 7 percentage point decrease in the likelihood of this outcome. The probability of taking facilitating subjects at A level decreased from 7 percent to 13 percent if pupils took more applied subjects (two or more) at GCSE.

Table 8 shows the predicted probabilities and average marginal effects of taking facilitating A Level subjects by type of 14-16 curriculum and gender, class and ethnicity. As with other post-16 transitions in general pursuing an EBacc-eligible curriculum increased the chances for both boys and girls. There was a significantly greater advantage, however, for girls in pursuing an EBacc-eligible curriculum; the probability for girls increased by 15 percentage points, compared to a seven percentage point greater chance for boys of taking facilitating A Level subjects ( $\chi^2=5.04$ ,  $P<.05$ ). Girls who had taken an applied GCSE were seven percentage points less likely to be studying facilitating A Level subjects, while for boys, one applied subject was not enough to generate a disadvantage. However, if boys increased the number of applied subjects to two or more they were 12 percentage points less likely to be studying facilitating subjects. The increase in number of applied subjects did not change the probability of taking facilitating subjects for girls.

**Table 8: Interactive effects on probability of taking two or more facilitating subjects at A Level by gender, class and ethnicity and 14-16 curriculum**  
(Predicted probabilities and marginal effects at means of following an EBacc-eligible curriculum or taking applied subjects)

	EBacc		Eligible		Margin	Applied		Studied		Margin
	Not eligible	SE	PP	SE		Not studied	SE	PP	SE	
<b><u>Gender*curriculum</u></b>										
Male *	0.38	(0.02)	0.45	(0.02)	0.07*	0.43	(0.02)	0.39	(0.02)	-0.04
Female *	0.27	(0.02)	0.42	(0.02)	0.15***	0.36	(0.02)	0.29	(0.02)	-0.07**
<b><u>Class*curriculum</u></b>										
Managerial	0.32	(0.02)	0.45	(0.02)	0.13***	0.40	(0.02)	0.33	(0.03)	-0.08*
Intermediate	0.34	(0.02)	0.45	(0.02)	0.11***	0.41	(0.02)	0.35	(0.03)	-0.05
Routine	0.31	(0.02)	0.40	(0.02)	0.09**	0.36	(0.02)	0.32	(0.02)	-0.05
<b><u>Ethnicity*curriculum</u></b>										
White	0.32	(0.02)	0.42	(0.02)	0.11***	0.39	(0.01)	0.33	(0.02)	-0.06**
Non-white	0.34	(0.03)	0.48	(0.04)	0.15***	0.42	(0.03)	0.37	(0.03)	-0.05
Observations	4,180					4,180				

Controlling for parental education, income, housing tenure, SEN, school characteristics, Key stage 4  
Standard errors reported in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**NOTE:** Reporting marginal effects with all other predictors set at their mean values

**Source:** Secure Lab: First Longitudinal Study of Young People in England, Waves One to Seven, 2004-2010, Secure Access.

The impact of the 14-16 curriculum on studying facilitating A Levels was similar across the three social classes, but there were differences for white and non-white children. The influence of pursuing an EBacc-eligible curriculum on the chances of studying facilitating A Levels was 11 percentage points and 15 percentage points respectively greater for white and non-white young people. Studying an applied subject at age 14-16 significantly reduced the probability of white students taking facilitating A Level subjects, by six percentage points if they took one or more, and 12 percentage points if they took two or more, but made no significant difference for non-white students.

## Summary of results

As shown in Figure 1, pursuing an EBacc-eligible curriculum at 14-16 increased the probability of staying in full-time education, studying A levels and taking facilitating subjects at A level. While choosing an applied subject significantly reduced the likelihood of a more academic track for students. Curriculum choices at 14-16 increase in importance as the educational transitions become more selective. In addition, there were differences in the influence of curriculum choice on particular groups of pupils. Taking an EBacc-eligible curriculum was advantageous for both boys and girls, while studying an applied subject was a disadvantage, particularly for girls. As shown in Figure 2 curriculum choice at 14-16 was more influential for girls than boys. Compared to boys, girls pursuing an EBacc-eligible curriculum than those not, were more likely to be in full-time education. In addition, pursuing an EBacc-eligible curriculum was especially key for girls taking facilitating subjects at A level. While girls compared to boys taking an applied subject were significantly less likely to

be studying A levels. The advantages of pursuing an EBacc-eligible curriculum and the disadvantages of taking an applied subject in all post-16 educational outcomes were equal across all social classes. There were however, ethnic differences as shown in Figure 3. White pupils were significantly more likely to stay in full-time education and take A levels if they studied EBacc-eligible subjects than if they had not. For white pupils, pursuing an applied subject at 14-16 reduced their chances of staying in full-time education or taking A levels. Conversely, the influence of curriculum choice on staying in full-time education and taking A levels for non-white pupils was not significant. However, for both white and non-white pupils choosing EBacc-eligible subjects increased the probability of taking facilitating subjects at A level.

Figure 1: Predicting post-16 transitions by 14-16 curricula (predicted probabilities)

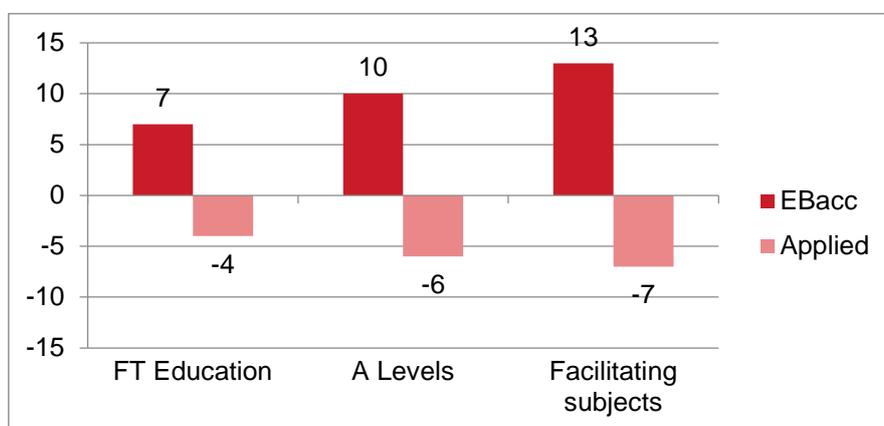


Figure 2: Predicting post-16 transitions for boys and girls by 14-16 curricula (predicted probabilities)

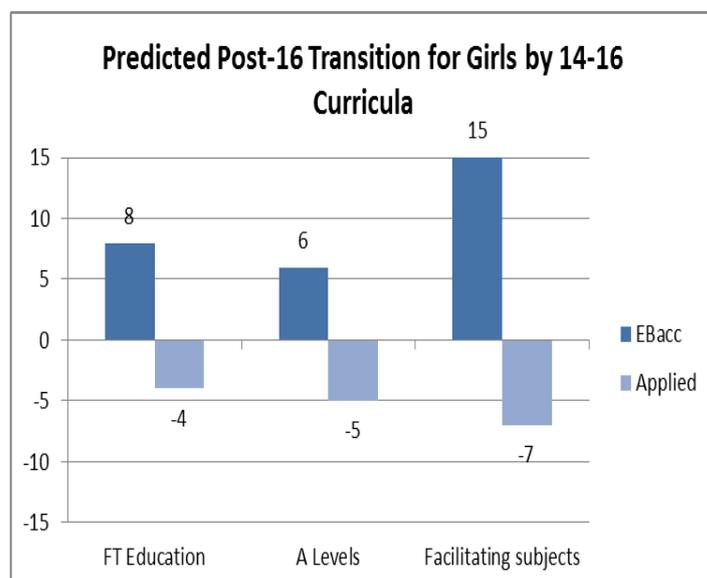
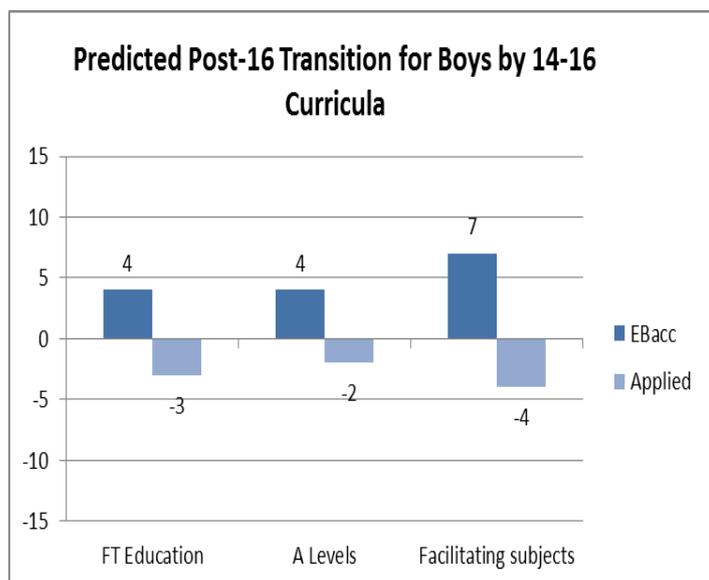
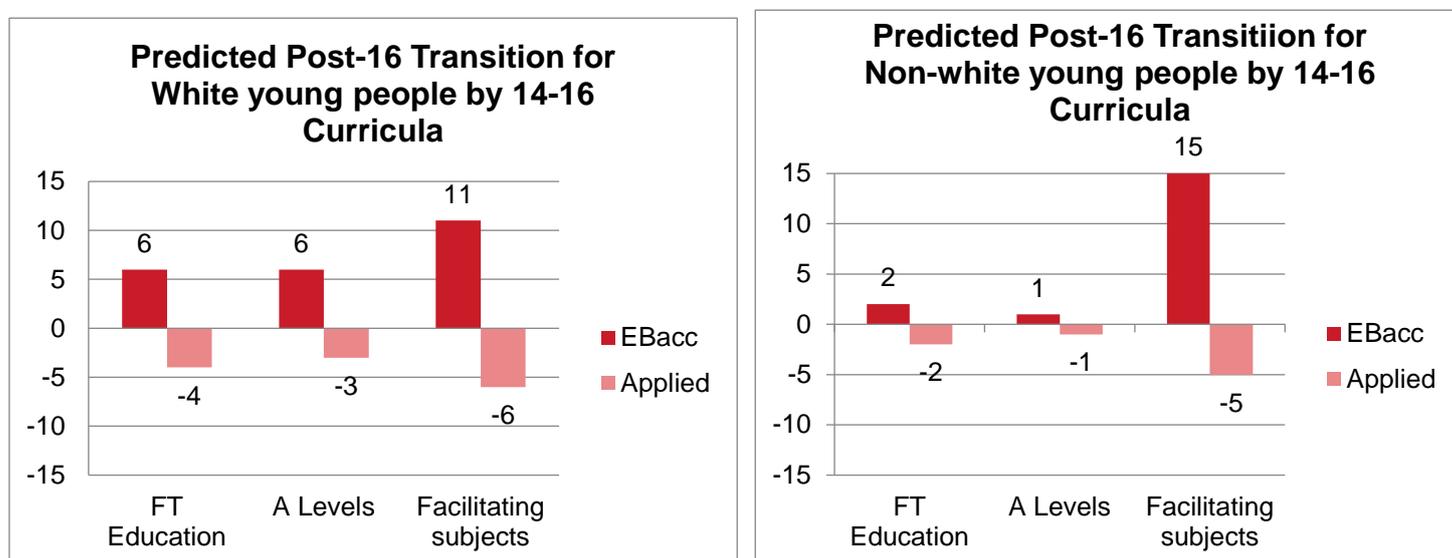


Figure 3: Predicting post-16 transitions for white and non-white young people by 14-16 curricula (predicted probabilities)



## Conclusions

Previous work suggests that subject ‘choice’ at age 14-16 could have a potential role in exacerbating inequalities, rather than simply reflecting advantages and disadvantages that were already apparent earlier in the school career (Henderson et al., 2016). This paper examined the impact of the curriculum studied by pupils aged 14-16 on whether they continued in education post-16, and if so, what kind of 16-18 curriculum they pursued. Using data from ‘Next Steps’ and education records from the NPD, we considered students post-16 progression to full time education, A Levels and studying highly valued facilitating subjects, while controlling for individual, family and school characteristics, as well as the pupils’ prior attainment. Strengths of our study include the use of longitudinal data to address educational trajectories over time, and the interrogation of interaction effects to assess differences in the effects of the curriculum on boys and girls, and on different ethnic and social class groups. A potential weakness, as with any observational study, is that our results are dependent on the quality of our controls. Connectedly, controlling for prior attainment at KS4 (age 16) could be seen as an over-control either because some GCSE subjects are harder than others and this is not reflected in our GCSE score (although Benton, 2015, suggests that more complex methods of aggregation are unlikely to do a better job of predicting future outcomes) or if part of the value of a demanding 14-16 curriculum is due to its effect on learning, and potentially higher attainment at age 16. Our results should not, therefore, be interpreted causally. However, in supplementary analysis, available on request, we separately controlled for both KS3 (age 14) and KS2 (age 11) attainment, instead of KS4 attainment, to test the robustness of our findings. The pattern of results was highly similar.

Leaks in the educational pipeline increase as post-16 transitions become more selective; over three-quarters of young people were in full-time education (77%), and under a half (47%) pursued a university track curriculum, studying A Levels. Of those students taking A Levels only just over a third (37%) took two or more facilitating subjects, thus according to the Russell Group, '...keeping a wide range of degree courses and career options open to them'. Not surprisingly, prior attainment was the most important factor in explaining all post-16 transitions. As shown in previous studies, students with more educated parents, from minority ethnic backgrounds, girls, and young people with SEN were more likely to be in full-time education and studying A Levels post-16. However, fewer characteristics predicted students' progression to choosing facilitating subjects at A level. The 14-16 curriculum influenced pupils' transitions into staying in full-time education, studying A Levels, and the type of A Levels that pupils took. Importantly, pursuing an EBacc-eligible curriculum increased the chances of progressing into all three post-16 educational outcomes, while choosing applied subjects significantly reduced the probability. Moreover, curriculum choices become more important as the educational transitions become more selective. Choosing an EBacc-eligible curriculum at 14-16 increases the chances of a more academic track, while applied subject choices appear to contribute to leaks in the educational pipeline. Subjects included in the EBacc curriculum allow pupils to choose facilitating subjects at A level. Students taking a more vocational route may be ineligible to pursue more highly valued A levels, not having studied particular subjects at GCSE.

School characteristics partly explained pupils' post-16 transitions. After adjusting for prior attainment, attending a grammar school increased the chances of staying in full-time education and studying A Levels, but did not influence the chance of pursuing facilitating subjects. In addition, attending a school with smaller class sizes and a lower proportion of pupils with FSM partly explained the chances of transition to A Levels. Nevertheless, school characteristics did not explain away the 'effect' of curriculum choice on post-16 progression.

The choice of curriculum had a greater influence on post-16 outcomes for some groups of pupils than for others. Although there were more girls than boys in full-time education, the relationship between pursuing an EBacc-eligible curriculum and staying in full-time education was stronger for girls than boys. Similarly, taking applied subjects reduced the chances of progressing to A levels more for girls than for boys. For girls, the advantage of following an EBacc-eligible curriculum seems to be greatest in promoting facilitating A level subjects, which may increase their chances of gaining access to higher education and in particular the Russell Group and higher ranked universities (Vidal Rodeiro et al., 2013; Dilnot, 2017). This may be driven by the fact that girls who did not study an EBacc-eligible curriculum were particularly unlikely to take science A levels. This link between the 14-16 curriculum and science progression for girls is highly policy-relevant, and should be investigated further in future research.

Interestingly, the advantages of studying an EBacc-eligible curriculum, and disadvantages of taking applied subjects in progressing to all post-16 educational outcomes, were equal across social classes. This does not support the idea that applied or less academic subjects have a special value for working class pupils.

Working class pupils were less likely to take an EBacc-eligible curriculum, and were also less likely to progress to any of the post-16 educational outcomes. Increasing the proportion of working class pupils following an EBacc-eligible curriculum could be a potential lever to increase the educational participation of this group (Dilnot, 2017). White pupils were less likely to stay in full time education than other ethnic groups, and their chances of staying increased if they took an EBacc-eligible curriculum. This pattern also persisted for white young people in their progression to studying A Levels. The curriculum studied appeared to be less influential for non-white pupils than for whites. However, for both white and non-white pupils pursuing an EBacc-eligible curriculum rather than not, increased their chances of taking facilitating A Level subjects.

Our results suggest that the introduction of the EBacc may improve the educational trajectories of the current student body, although there is a significant chance that this increase in uptake may devalue the 'effect' of combinations of subjects if it is partly due to signalling. That is, if the difference stems from marking out more academically able and motivated students, it will lose some of its power if it is present for all individuals.

An important conclusion from our results is that we are unable to find evidence to support the value of a less academic (non-EBacc) or applied subjects, not just on average, but for any social group, including working class pupils. In fact, such a curriculum appears particularly disadvantageous for white pupils and girls. Policymakers have experimented with the curriculum, often without evidence regarding the average effects, let alone the implications for particular groups of pupils. Our findings suggest that such policies may have an unforeseen and long term influence on young people's educational trajectories, with implications for inequalities in the life course.

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