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Does academic self-concept predict further and higher education participation?

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Morag Henderson, Kirstine Hansen and Nikki Shure

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Abstract: Despite the major increase in university student numbers in recent years there remains a strong negative socio-economic gradient in participation. The main reason for these differences has been shown to be educational factors, including prior attainment, family background and perceptions about costs and returns to education. In this paper, we examine the role of young people's belief in their own academic ability (academic self-concept) as a way to explain differences in university participation rates. Using Next Steps data, we examine whether young people with higher academic self-concept are more likely to study A Levels, participate in further education and attend university. For those who do attend university, we examine whether young people with higher self-belief attend high status universities or study high status subjects. Results show that on average, controlling for prior attainment and other background characteristics, having high academic self-concept increases the odds in participating in A Level study, decreases the odds in taking part in further education, increases the odds in taking part in higher education (but the significance level disappears after taking A Levels is taken into account) and increases the odds of studying at a high-status university. While academic self-concept is an important predictor of later educational transitions, it does not entirely account for the social gradient in participation of university, further education or higher education. These findings have important policy implications for higher education participation and widening participation in particular.

Key words: Academic self-concept, higher education participation.

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Introduction

A university degree is considered the key to achieving economic success and other associated outcomes, such as good health and life satisfaction. However, despite access to higher education expanding dramatically in recent years in the UK, there has been little change in the proportion of university students from lower socio-economic groups studying for a degree. In trying to understand the reasons some young people attend university and some do not, it is important to identify the choices these young people make at every stage of the educational system. This requires a holistic approach to understanding higher education, which means examining post-16 educational transitions. These include A level study, attending a further education (FE) institution, as well as, for those who attend university, the subjects studied and the status of the university.

Progression from one level of education to another has been shown to be contingent on a number of factors including familial resource and socio-economic status (Chowdry et al. 2010; Blanden and Machin, 2004; Raffe et al. 2006), ethnicity (Boliver, 2016) and gender (Broecke and Hamed, 2008), although some of these effects are ameliorated by prior attainment (Chowdry et al. 2010). For example, those who perform worse at GCSEs tend to remain studying level 2 qualifications post age 16, and around half progress no further up the educational ladder (Hupkau et al., 2016). This pathway offers poorer prospects and lower returns than level 3 qualifications (Dearden et al., 2004). Moreover, without level 3 qualifications, pathways to higher education are blocked. Indeed, Chowdry et al. (2013) show that access to university (and therefore later labour market opportunities and much higher returns) is strongly influenced by attainment at age 16. There is reason to believe that non-cognitive skills, including aspects of self-belief or academic self-concept, may also play an important role in higher education and labour market outcomes (Borghans et al., 2008; Almlund et al., 2011).

There is general concern that access to higher education is strongly determined by the socio-economic background of young people with all the implications this has for inequality of opportunity and lack of social mobility. This paper contributes to the existing literature around access to higher education attainment by examining the role that academic self-concept (ASC) plays in understanding differences of access along educational pathways. More specifically we ask: controlling for other factors, does having a greater belief in your own academic ability improve the chances of studying A Levels, studying for a vocational qualification in FE, and studying for a degree at a higher education institution, and does it influence the subject studied at university and the status of the university? If it does, targeting self-belief may offer policy makers interested in widening participation in higher education a relatively easier target for intervention than reducing inequalities in parental income or education or any of the other factors that contribute to achievement gaps.

Higher education participation

Much of the focus of the social inequality literature is on the extent to which education can have an equalising effect, where higher education in particular is seen as a panacea to inequality (Jerrim and Macmillan, 2015). However, much of the previous work on higher education participation has shown that there has been little change on ascribed characteristics of young people, despite an increase in the number of people attending university and expansion of the higher education landscape in the UK post-1992. As noted by Breen (2005),

“...[while] the mean level of attainment has indeed increased, differentials around this mean, according to class, have remained roughly constant” (Breen, 2005, p55).

Blanden and Machin (2004) explore the distributional consequences of this higher education expansion in the UK. They find that higher education expansion has benefited young people from higher income families the most. By examining demographic changes over time, they also find that the expansion in the 1990s actually widened participation gaps between rich and poor children.

More recently, Boliver (2010) confirms that social class inequalities in British higher education participation have been both effectively maintained and maximised, meaning that despite educational expansion, those from higher social class backgrounds are better able to take up the new educational opportunities that expansion affords. In addition to this, Boliver (2013) finds that those from higher social class backgrounds are better placed to ensure that they obtain high quality education, including studying at higher status universities and selecting more prestigious degree subjects.

Identification of these issues has given rise to the ‘widening participation’ agenda in the UK, which seeks to address the patterns of under-representation in higher education (Gorard 2006; Chowdry et al., 2013). This has become an important policy issue for universities who are not just focusing on increasing the number of students studying at university, but also the participation rates among young people from non-traditional backgrounds. Yet, as previous research has shown, policies to ‘widen participation’ may have adverse consequences, making it important to understand the drivers behind higher education application and participation decisions.

Much of the literature has focused on more tangible issues that can influence the decision to go on to higher education study, including credit constraints (Gayle et al., 2002; Dearden et al., 2004) and parental socio-economic status and education. Connor et al. (2001) note that students from lower social class groups appeared to have lower levels of confidence about their ability to succeed in higher education than those from higher social class backgrounds. This expectation of success may influence the propensity to apply to university, apply to prestigious courses and apply

to high status universities, and highlights the importance of 'non-cognitive traits' in the debate on widening participation.

Across a large part of the economic literature there is increasing consensus that non-cognitive traits have important effects on educational attainment and labour market outcomes (Borghans et al., 2008; Almlund et al., 2011; Burnello and Schlotter, 2011; Gensowski, 2014). Non-cognitive skills can be defined in a number of ways and encompass a number of different characteristics, including personality traits (openness, agreeableness, conscientiousness, neuroticism and extraversion); the degree to which an individual attributes their successes or failures to themselves or others (e.g. Rotter's measure of locus of control); and measures of self-esteem, motivation, time management and emotional regulation.

In examining the relationship between these non-cognitive traits and later outcomes, Heckman et al. (2006) find that an increase in the non-cognitive test scores (in particular locus of control and self-esteem) increases the probability of having a four year degree in the United States (this is a similar order of magnitude as a similar increase in cognitive skills). Heckman et al. (2006) find that both cognitive and non-cognitive skills are important for success for many of the dimensions they examine (including educational progression, labour market outcome and participation in risky behaviours).

Academic self-concept

If young people were accurate at judging their own abilities, then their self-belief would accurately reflect their ability and achievement. However, evidence indicates that young people are not necessarily good at predicting their own academic ability (see Dunning et al., 2004 for a review of the literature). In general, young people tend to overestimate their ability (Falchikov and Boud, 1989), both in actual terms and relative to their peers. However, self-belief varies widely across young people depending on their characteristics, family backgrounds and the schools they attend.

Females have been shown to underestimate their academic ability. Conversely, boys tend to overrate their abilities and are especially likely to rate their abilities more highly in subjects traditionally thought of as masculine such as mathematics and science (Joffe and Foxman, 1988; Marsh, 1989; Marsh and Yeung, 1998; Wilgenbusch and Merrell, 1999; Sullivan, 2009). Children from the lower social classes and those with less educated parents tend to have lower self-belief in their academic abilities than their more privileged counterparts (Correll, 2001; Sullivan, 2006). Of the two, Sullivan (2009) finds parental education to be more strongly and consistently associated with academic self-assessment than parental social class.

A student's frame of reference has also been shown to be important, such that students with high attaining peers will be more likely to consider themselves below average than students of the same ability but surrounded by lower attaining peers. This is known as the 'Big-Fish-Little-Pond effect' (Marsh and Hau, 2003). Sullivan (2009), using NCDS data, finds evidence that empirically supports this theory by showing that students at academically selective schools and independent schools have lower self-belief than students in comprehensive schools. Moore and Kim (2003) show that a student's internal frame of reference is also important for their self-belief. They find that students have greater self-belief in their own ability when they are faced with easier tasks. When tasks are more challenging young people are found to be less confident about their relative achievement so we might expect to see self-belief vary across different subjects – maths versus English for example.

Such differences in academic self-belief mean that if we consider two individuals with the same level of academic ability, it is likely that one would have higher belief in their ability than the other. This matters, if self-belief, independent of actual ability and other factors related to academic outcomes, is associated with academic achievement. In other words, if controlling for other characteristics, young people with higher (or lower) self-belief do better (or worse) in any test directly due to their self-belief. In this case, self-belief would contribute to the achievement gaps and could be targeted as a way of reducing educational inequalities at 16 which have been found to be important in determining educational and career pathways throughout life.

Conceptually, self-belief could affect educational outcomes in a positive or negative way. Greater self-belief could reduce nerves in exam settings, producing a more confident performance resulting in higher grades. Those with higher self-belief may have higher expectations and push themselves harder to achieve their goals. But equally, students with higher self-belief, believing they will achieve highly anyway, may invest less time in revision and exam preparation, achieving poorer results. The empirical evidence remains mixed as to the relationship between academic self-belief and educational outcomes. Cairns and Cairns (1995) find higher self-belief to be positively related to learning and a degree of over-confidence positively associated with educational attainment. However, Baumeister et al. (2003) find no causal effect of self-belief on educational attainment and Dunning et al. (2004) find only a weak correlation between actual and perceived academic performance. However, to our knowledge little has been done to explore the lasting effect of self-belief on later educational transitions. This paper seeks to address this gap.

More specifically, this paper draws on both the achievement literature and the self-belief literature to build models which allow us to examine the relationship between self-belief and progression through the educational pathways in England. Using data from the Next Steps Survey we address a number of research questions: What are the correlates of academic self-belief? To what extent does self-belief influence studying for A levels; studying vocational qualifications in a further education

institution; studying for a degree at university; the status of the higher education institution and the subject studied? The data are described in the following section before descriptive and then regression analyses are carried out and discussed. A summary section draws the paper to a close with a discussion of the results and the implications they may have.

Data and methods

We use 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 data¹. This cohort of young people can be linked with the National Pupil Database (NPD) which provides a census of pupils attending schools in England.

Next Steps began in 2004 when the sample members were aged between 13 and 14. The timing of this cohort means that the young people were affected by New Labour's education policy, which promoted diversity and flexibility in the 14-16 curriculum. Respondents were selected to be representative of young people in England using a stratified random sample, with disproportionate sampling 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 school clusters and the appropriate weights.

Following the approach taken by Strand (2011), we create a composite measure for self-concept using information collected at age 14 using seven variables, including a young person report on whether they get good marks for their work; how good they think they are at school work; how good their teachers think they are at school work; and how good they think they are at: English, maths, science and information and communication technology (ICT). Using a Principal Component Analysis (PCA) we reduce these responses into a component which has underlying similarities. The results from the data rotation identified one composite factor with an Eigenvalue of one or more (2.85). The PCA-reduced variable is then used in the analysis after it is grouped into quintiles, where a low principal component score denotes low academic self-concept and a high score denotes high self-concept.

Our main outcomes of interest relate to educational trajectories, such as participation in Advanced (A) Level study and participation in further education and higher education. A Levels are considered the traditional university-track course of study post-16.² A Levels are two-year courses and are usually assessed by examination.

¹ The Age 25 data will be released in the summer of 2017.

² 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).

Further education (FE) institutions offer a number of academic and vocational qualifications post-16, they are important institutions for adult education (although funding in this has recently been cut) and enable students to continue studying outside of the school environment. They offer A Levels in addition to two-year diplomas and vocational training which offers an alternative pathway to university study and labour market participation. The higher education (HE) market in the UK is highly stratified, with the so-called Russell Group universities, which are a network of 24 research-intensive institutions and command higher status than some of the 'red-brick' and 'new' universities. Furthermore we examine the subject studied at university by prior attainment and academic self-belief.

We make use of the first four waves of Next Steps to capture the main independent variables: social class,³ parental education, equivalised permanent income,⁴ housing tenure, ethnicity, gender, special educational needs (SEN), capped linear GCSE scores (Key Stage 4) and school type attended. By controlling for prior attainment and these other background characteristics we are able to isolate the 'effect' of academic self-concept. Observations are included in the analytic models when the dependent variable responses have no missing data. However, some independent variables also suffer from item non-response. In order to avoid dropping cases with missing or unknown information on background variables we take the first available response mentioned for parental class, parental education and household tenure over the first four waves. The main advantages of this approach are avoiding the loss of statistical power due to reduced N and reducing bias.

We restrict the sample to only those students who respond to all seven of the measures related to academic self-concept (outlined above); students for whom we have GCSE results; and those who responded to details about their study status at age 19. These exclusions result in an analytical sample of 9,575.

As our dependent variables are binary outcomes, we make use of multivariate logistic regression models. We acknowledge that our modelling strategy is vulnerable to omitted variable bias, since our independent variables of interest, such as parental socio-economic status, are likely to be correlated with many individual- and school-level factors affecting a student's ability and academic self-concept. We do try to minimise this issue through use of the rich background data (including prior

³ Social class is measured using the National Statistics Socio Economic Classification (NS-SEC) which uses occupational types to capture dimensions of social class (Rose and Pevalin, 2001). We make use of the three-category NS-SEC, which consists of: Higher Managerial, administrative and professional occupations; Intermediate occupations; Routine and manual occupations. More details can be found at <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html#5>.

⁴ We take an average of the household income over the first four waves and divide by the square root of household size to provide a measure of equivalised permanent income. This has been shown to have a larger effect on young people's educational outcomes than transitory income (Jenkins and Schluter, 2002).

attainment measures) available in Next Steps. Nevertheless, we do not view our results as truly causal, but rather capturing conditional relationships between background and self-belief, and self-belief and educational transitions. In addition, we account for the fact that observations are not truly independent from others attending the same school by calculating cluster-robust standard errors at school-level to conduct appropriate statistical inference.⁵

Descriptives

Over half of the sample (54.6%) studied A Levels, while just over one-tenth (11%) went to a further education institution. 37.6% of the sample went to university and of that group, 21.1% attended a Russell Group university.

Results

Table 1 shows the characteristics by academic self-concept in quintiles. Students with high levels of academic self-concept have higher Key Stage 2 results, higher linear GCSE scores on average and a higher proportion of them achieve five A*-C GCSEs. A greater proportion of those in the top 20 per cent of the academic self-concept distribution have a parent from a higher managerial job; have a parent educated to degree level or higher; live in households with higher equivalised family income; and attend an independent school. A smaller proportion of those in the higher quintiles of academic self-concept are women or have special education needs.

⁵ The frequencies (and means) for the variables are reported in Table 1.

Table 1. Descriptive Statistics

	Academic Self- Concept Q1	Academic Self- Concept Q2	Academic Self- Concept Q3	Academic Self- Concept Q4	Academic Self- Concept Q5	Total
Academic Self-Concept (quintiles)	20%	20%	20%	20%	20%	100%
GCSE attainment (quintiles)						
Q1	40.6%	22.0%	15.8%	11.3%	10.2%	100%
Q2	31.1%	25.9%	18.5%	16.0%	8.5%	100%
Q3	17.8%	25.1%	22.8%	20.3%	14.0%	100%
Q4	10.6%	17.4%	24.3%	24.7%	23.0%	100%
Q5	3.7%	8.1%	19.4%	26.8%	42.0%	100%
Parental Social Class						
Higher Managerial	13.0%	16.4%	22.4%	22.9%	25.4%	100%
Intermediate	18.8%	20.9%	20.8%	18.6%	21.0%	100%
Routine	21.2%	19.4%	19.5%	20.7%	19.2%	100%
Highest Parental Education						
Degree or Equivalent	11.5%	15.6%	21.5%	22.1%	29.3%	100%
Other HE qualification	16.2%	20.8%	21.3%	20.2%	21.6%	100%
A Level	16.8%	19.6%	23.5%	21.6%	18.4%	100%
GCSE A-C	24.4%	20.3%	19.0%	19.6%	16.7%	100%
Level 1 and below	19.1%	19.3%	19.8%	20.8%	21.0%	100%
Income						
Mean equivalised household income (multiple of £10,000)	1.37	1.44	1.55	1.56	1.67	1.52
Household Tenure						
Owns/Mortgage	17.4%	18.6%	20.8%	21.2%	22.0%	100%
Rent/ Other	22.1%	20.5%	19.6%	19.2%	18.6%	100%
Ethnicity						
White	21.1%	19.0%	20.9%	19.4%	19.6%	100%
Mixed	15.9%	20.6%	19.6%	21.6%	22.3%	100%
Indian	13.1%	17.0%	18.6%	24.9%	26.5%	100%
Pakistani	10.3%	16.3%	19.3%	27.6%	26.6%	100%
Bangladeshi	12.0%	19.1%	23.2%	21.2%	24.6%	100%
Black Caribbean	18.5%	25.6%	16.4%	21.0%	18.5%	100%
Black African	6.6%	20.5%	19.2%	23.8%	29.8%	100%
Other	11.6%	21.5%	21.0%	22.3%	23.6%	100%
Gender						
Male	16.7%	18.0%	21.5%	21.2%	22.6%	100%
Female	20.4%	20.1%	19.6%	20.2%	19.8%	100%
Special Education Needs (SEN)						
No Special Education needs	17.2%	19.1%	20.9%	21.2%	21.6%	100%
Special Education Needs	41.8%	18.0%	14.4%	12.3%	13.6%	100%
School Type						
Did not attend Independent School	18.7%	19.1%	20.5%	20.6%	21.1%	100%
Independent School	13.4%	15.2%	22.3%	24.1%	25.0%	100%
A Levels						
Ref: Did not take A Levels	32.2%	24.1%	18.8%	14.7%	10.2%	100%
A Levels	9.4%	15.7%	21.6%	24.7%	28.5%	100%

N=9,575

To examine more fully whether academic self-concept varies systematically across certain groups, as the descriptive statistics indicate it may, we run a series of multivariate OLS regression models predicting academic self-concept. The results of these regressions, shown in Table 2, model family level variables in Model a, then add individual characteristics in Model b and school type in Model c. Our final model (Model d) includes all variables plus a measure of prior achievement.

Table 2 OLS Regression Predicting Academic Self Concept (quintiles)

	Model 1 Socio-economic background		Model 2 + individual characteristics		Model 3 + GCSE attainment		Model 4 + School type	
	β	SE	β	SE	β	SE	β	SE
Ref. Higher Managerial								
Intermediate	-0.15**	(0.04)	-0.15***	(0.04)	-0.15***	(0.04)	-0.10*	(0.04)
Routine	-0.12*	(0.05)	-0.13**	(0.04)	-0.13**	(0.04)	-0.03	(0.04)
Ref. Degree or equivalent								
Other HE qualification	-0.29***	(0.05)	-0.24***	(0.05)	-0.24***	(0.05)	-0.14**	(0.05)
A Level	-0.28***	(0.06)	-0.23***	(0.06)	-0.23***	(0.06)	-0.14**	(0.05)
GCSE A-C	-0.47***	(0.05)	-0.39***	(0.05)	-0.39***	(0.05)	-0.19***	(0.04)
Level 1 and below	-0.25***	(0.05)	-0.37***	(0.05)	-0.37***	(0.05)	-0.11*	(0.05)
Equivalised household income (£10,000)								
	0.04*	(0.02)	0.08***	(0.02)	0.08***	(0.02)	0.03	(0.02)
Ref. Owns home or Mortgage								
Rent/Other	-0.10**	(0.03)	-0.07+	(0.04)	-0.07+	(0.04)	0.02	(0.03)
Ref. White								
Mixed			0.11+	(0.07)	0.12+	(0.07)	0.13+	(0.07)
Indian			0.50***	(0.06)	0.50***	(0.06)	0.54***	(0.06)
Pakistani			0.61***	(0.06)	0.61***	(0.06)	0.81***	(0.06)
Bangladeshi			0.46***	(0.07)	0.46***	(0.07)	0.52***	(0.07)
Black Caribbean			0.10	(0.08)	0.10	(0.08)	0.20*	(0.08)
Black African			0.71***	(0.08)	0.71***	(0.08)	0.74***	(0.09)
Other			0.40***	(0.08)	0.40***	(0.08)	0.41***	(0.08)
Ref. Boys								
Girls			-0.16***	(0.03)	-0.16***	(0.03)	-0.19***	(0.03)
Ref. No Special Education Needs (SEN)								
SEN			-0.61***	(0.06)	-0.61***	(0.06)	-0.03	(0.06)
School type								
Independent school					0.11	(0.12)	-0.05	(0.12)
							0.13***	(0.00)
Key stage 2								
Constant	3.36***	(0.06)	3.28***	(0.06)	3.28***	(0.06)	-0.45***	(0.13)
Observations	9,575		9,575		9,575		9,575	
R-squared	0.03		0.06		0.06		0.16	

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

The results indicate that family background is associated with a young person's academic self-concept. Young people from lower social class households have lower levels of academic self-concept than those whose parents have a higher managerial background. Moreover, those whose parents are less educated and those living in rented accommodation and in poorer households have lower levels of academic self-concept (Model a).

When we take into account individual characteristics (Model b), these family background relationships change very little, except the association between parental education and academic self-concept is attenuated and housing tenure loses its statistical significance. In addition, this model indicates that a number of individual characteristics of the children themselves are also associated with their academic self-concept. Once family background has been taken into account, compared to white young people, most other groups are more likely to have higher levels of academic self-concept, although the Black Caribbean and mixed group are not

significantly different from white young people. Alongside ethnic differences in academic self-concept there are also gender differences, with girls reporting lower levels of academic self-concept than boys and those with Special Education Needs (SEN) reporting lower levels of academic self-concept compared to those who do not have SEN.

In Model c we add an indicator of whether the young person attends an independent school compared to a state school. Interestingly the coefficient for independent schools is positive, but not significant, meaning that there is no evidence of a difference in academic self-concept between young people at fee paying schools compared to non-fee paying schools. The inclusion of this variable does not alter any of the family background or individual characteristics substantially.

Unsurprisingly, we see a positive association between prior attainment and academic self-concept (Model d); as Key Stage 2 scores increase, young people are more likely to report having higher academic self-concept. The inclusion of prior attainment changes the coefficients on many of the variables examined. In particular, the inclusion of prior attainment reduces the magnitude of many of the family background variables. The associations between high academic self-concept and social class, parental education and income differentials evident in previous models are weakened but remain statistically significant once we add prior attainment to the model. Income and household tenure coefficients now become statistically insignificant. The SEN coefficient is also no longer significant once prior attainment is taken into account. However, the ethnic differences increase when prior attainment is included in the model, with all groups having higher academic self-concept than young white people, suggesting that ethnic differences in academic self-concept are exacerbated by prior attainment. In addition to ethnicity, statistically significant differences in academic self-concept remain for other groups and while this final model suggests that prior attainment is an important predictor for academic self-concept, differences in academic self-concept remain by socio-economic status, parental education, ethnicity and gender even after controlling for prior attainment.

Educational trajectories

Turning now to the relationship between academic self-concept and educational trajectories, we make use of the covariates used in Table 2 (Model d) to account for observable family background, prior attainment, school and individual characteristics that may be related to A Level, further and higher education study. In this way, while controlling for other factors that may influence educational trajectories – including prior attainment – our models are isolating the role academic self-concept plays at different levels of education. This means that we are able to identify the association between academic self-concept and educational progression for individuals who have the same level of prior attainment but different levels of academic self-concept. The results shown in Table 3, Model 1 show that the association between academic

self-concept and A Level participation is positive and significant, meaning that those with higher academic self-concept have 24 per cent higher odds of studying A Level, over and above socio-economic characteristics, individual characteristics and prior attainment. The inclusion of academic self-concept does not fully account for parental educational differences or family income differences in A Level study⁶.

Table 3. Academic Self-Concept predicting Educational Transitions

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A Level participation		Further Education Participation		Higher Education Participation		Higher Education Participation with A Level Participation		Russell Group	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Academic Self-Concept (quintiles)	1.24***	(0.04)	0.94*	(0.03)	1.09**	(0.03)	1.04	(0.03)	1.17***	(0.05)
GCSE attainment (quintiles)	3.74***	(0.16)	0.79***	(0.03)	3.17***	(0.11)	2.44***	(0.10)	3.55***	(0.30)
Ref: Higher Managerial										
Intermediate	1.10	(0.12)	1.03	(0.12)	1.07	(0.11)	1.05	(0.11)	0.88	(0.11)
Routine	1.03	(0.12)	1.03	(0.12)	0.89	(0.09)	0.88	(0.10)	0.86	(0.11)
Ref: Highest Parental Education Degree or Equivalent										
Other HE qualification	0.73*	(0.10)	1.69***	(0.25)	0.73**	(0.09)	0.76*	(0.09)	0.57***	(0.08)
A Level	0.63**	(0.09)	1.66**	(0.27)	0.52***	(0.06)	0.55***	(0.07)	0.58***	(0.10)
GCSE A-C	0.53***	(0.06)	1.76***	(0.25)	0.49***	(0.05)	0.54***	(0.06)	0.50***	(0.07)
Level 1 and below	0.60**	(0.09)	1.21	(0.21)	0.55***	(0.07)	0.60***	(0.08)	0.67*	(0.12)
Family income 13-17 (multiple of £10,000)	1.11*	(0.06)	1.07	(0.05)	1.14**	(0.05)	1.12*	(0.05)	1.12*	(0.05)
Ref: Owns/Mortgage										
Rent/ Other	0.80*	(0.08)	0.85	(0.09)	0.72***	(0.07)	0.75**	(0.07)	0.81	(0.13)
Ref: White										
Mixed	1.29	(0.34)	1.15	(0.23)	1.27	(0.26)	1.23	(0.25)	1.34	(0.30)
Indian	3.30***	(0.62)	0.81	(0.15)	8.20***	(1.28)	7.04***	(1.19)	1.23	(0.20)
Pakistani	3.14***	(0.50)	1.74***	(0.27)	4.58***	(0.81)	3.80***	(0.73)	1.04	(0.24)
Bangladeshi	3.81***	(0.72)	1.26	(0.23)	6.36***	(1.20)	5.07***	(1.02)	0.96	(0.27)
Black Caribbean	2.64***	(0.73)	0.96	(0.23)	3.22***	(0.74)	2.68***	(0.62)	0.97	(0.37)
Black African	3.35***	(0.95)	0.91	(0.33)	10.53***	(2.84)	9.36***	(2.83)	1.32	(0.39)
Other	2.50**	(0.78)	1.14	(0.31)	3.10***	(0.84)	2.75***	(0.74)	0.63+	(0.17)
Ref: Male										
Female	1.36***	(0.11)	0.72***	(0.06)	1.26**	(0.09)	1.19*	(0.09)	0.89	(0.08)
Ref: No Special Education needs										
Special Education Needs	0.69*	(0.12)	1.07	(0.16)	0.89	(0.16)	0.98	(0.19)	1.30	(0.42)
Ref: Did not attend Independent School										
Independent School	2.22*	(0.70)	0.62*	(0.12)	1.88***	(0.29)	1.62***	(0.22)	1.40	(0.36)
Ref: Did not take A Levels										
A Levels							4.24***	(0.35)	1.61*	(0.38)
Constant	0.01***	(0.00)	0.29***	(0.06)	0.01***	(0.00)	0.01***	(0.00)	0.00***	(0.00)
Pseudo R-squared	0.41		0.5		0.36		0.39		0.20	
Observations	9,575		9,575		9,575		9,575		3,588	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

⁶ The baseline models are shown in Table 4 for reference.

Table 3, Model 2 shows the association between academic self-concept and further education participation, the vocational post-16 route. We see that academic self-concept is negatively and significantly associated with further education participation; more specifically, those with high academic self-concept have six per cent lower odds of taking the further education route.

Turning now to the first of the three higher education outcomes, we find that those with high academic self-concept have nine per cent higher odds of studying for a degree (Model 3); however, once A Level participation is taken into account (Model 4), the academic self-concept odds are smaller and no longer significant. Model 5 makes use of a reduced analytical sample of those who studied for a degree to examine the type of higher education institution attended. The results indicate that there is a significant association between academic self-concept and attending a Russell Group university (for those who studied for a degree), with academic self-concept yielding odds which are 17 per cent higher.

Table 4. Predicting Educational Transitions (Baseline)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A Level participation		Further Education Participation		Higher Education Participation		Higher Education Participation with A Level Participation		Russell Group	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
GCSE attainment (quintiles)	3.90***	(0.13)	0.70***	(0.02)	3.20***	(0.10)	2.45***	(0.08)	3.85***	(0.31)
Ref: Higher Managerial										
Intermediate	1.08	(0.11)	1.11	(0.12)	1.02	(0.10)	1.01	(0.10)	0.87	(0.10)
Routine	1.00	(0.11)	1.11	(0.13)	0.84+	(0.08)	0.83+	(0.08)	0.87	(0.11)
Ref: Highest Parental Education Degree or Equivalent										
Other HE qualification	0.77*	(0.09)	1.60***	(0.21)	0.76*	(0.08)	0.78*	(0.09)	0.57***	(0.08)
A Level	0.65**	(0.09)	1.59**	(0.23)	0.57***	(0.07)	0.60***	(0.07)	0.57***	(0.09)
GCSE A-C	0.57***	(0.06)	1.55***	(0.19)	0.53***	(0.05)	0.58***	(0.06)	0.50***	(0.07)
Level 1 and below	0.67**	(0.09)	1.09	(0.16)	0.59***	(0.07)	0.62***	(0.08)	0.67*	(0.12)
Family income 13-17 (multiple of £10,000)	1.13**	(0.05)	1.04	(0.05)	1.14***	(0.05)	1.13**	(0.05)	1.12*	(0.05)
Ref: Owns/Mortgage										
Rent/ Other	0.82*	(0.07)	0.95	(0.08)	0.80*	(0.07)	0.84+	(0.08)	0.81	(0.13)
Ref: White										
Mixed	1.51*	(0.26)	1.26	(0.21)	1.21	(0.19)	1.14	(0.18)	1.36	(0.30)
Indian	3.58***	(0.52)	0.79	(0.12)	8.14***	(1.16)	6.87***	(1.02)	1.25	(0.20)
Pakistani	3.37***	(0.52)	1.62***	(0.23)	4.17***	(0.61)	3.38***	(0.52)	1.08	(0.25)
Bangladeshi	3.62***	(0.67)	1.19	(0.23)	6.48***	(1.13)	5.31***	(0.97)	0.99	(0.27)
Black Caribbean	2.10***	(0.40)	0.95	(0.20)	3.24***	(0.60)	2.88***	(0.54)	1.03	(0.39)
Black African	3.30***	(0.79)	0.60	(0.19)	9.74***	(2.34)	8.51***	(2.15)	1.38	(0.41)
Other	2.65***	(0.54)	0.93	(0.20)	3.58***	(0.66)	3.09***	(0.58)	0.64+	(0.17)
Ref: Male										
Female	1.15*	(0.08)	0.78***	(0.05)	1.16*	(0.07)	1.13+	(0.07)	0.85+	(0.08)
Ref: No Special Education needs										
Special Education Needs	0.61**	(0.11)	1.03	(0.14)	0.88	(0.15)	1.00	(0.18)	1.28	(0.41)
Ref: Did not attend Independent School										
Independent School	2.09+	(0.79)	0.74	(0.27)	1.69+	(0.48)	1.50	(0.43)	1.34	(0.34)
Ref: Did not take A Levels										

A Levels				4.02*** (0.31)	1.65* (0.39)
Pseudo R-squared	0.40	0.05	0.36	0.39	0.20
Observations	9,575	9,575	9,575	9,575	3,588

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Table 5: Multinomial Logit Regression Predicting Subject Studied at University: Compared to Medical and Physical Sciences

	Maths, technology or engineering		Social Sciences and Law		Business administration or communication		Classics or languages		History or Philosophy		Creative Arts and Design		Education		Other	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Academic Self-Concept (quintiles)	1.00	(0.06)	0.91+	(0.05)	0.89*	(0.05)	1.11	(0.09)	2.48**	(0.74)	1.04	(0.09)	0.84**	(0.05)	0.91*	(0.04)
GCSE attainment (quintiles)	1.03	(0.10)	0.85*	(0.07)	0.62***	(0.04)	0.93	(0.13)	0.95	(0.46)	1.16	(0.18)	0.69***	(0.06)	0.35***	(0.02)
Ref: Higher Managerial																
Intermediate	1.01	(0.18)	0.84	(0.15)	0.87	(0.15)	0.62+	(0.15)	4.15+	(3.38)	0.89	(0.21)	1.05	(0.18)	0.92	(0.12)
Routine	1.05	(0.22)	0.99	(0.19)	0.88	(0.15)	0.83	(0.20)	1.02	(1.30)	0.93	(0.25)	1.07	(0.19)	1.02	(0.14)
Ref: Highest Parental Education Degree or Equivalent																
Other HE qualification	1.38	(0.30)	1.09	(0.23)	1.50+	(0.32)	0.95	(0.25)	0.00***	(0.00)	1.04	(0.27)	1.15	(0.24)	1.44*	(0.23)
A Level	0.76	(0.19)	1.25	(0.29)	1.50*	(0.31)	0.65	(0.21)	2.67	(2.07)	0.72	(0.23)	0.94	(0.21)	1.64**	(0.25)
GCSE A-C	1.13	(0.21)	1.00	(0.19)	1.38+	(0.25)	0.68	(0.17)	0.34	(0.40)	0.76	(0.20)	0.71+	(0.14)	1.60**	(0.23)
Level 1 and below	1.55+	(0.35)	1.02	(0.25)	1.67*	(0.39)	0.76	(0.29)	0.37	(0.46)	0.34*	(0.18)	1.04	(0.28)	1.81**	(0.34)
Family income 13-17 (multiple of £10,000)	1.26**	(0.09)	1.12	(0.08)	1.14+	(0.08)	1.07	(0.10)	1.17	(0.29)	1.19*	(0.09)	1.10	(0.07)	0.97	(0.06)
Ref: Owns/Mortgage																
Rent/ Other	1.39	(0.30)	1.40+	(0.28)	1.10	(0.20)	1.91*	(0.53)	1.67	(2.51)	1.29	(0.52)	1.20	(0.25)	1.57**	(0.23)
Ref: White																
Mixed	0.78	(0.34)	1.14	(0.36)	0.47*	(0.16)	0.11**	(0.08)	1.40	(1.60)	0.32*	(0.16)	1.05	(0.32)	0.72	(0.17)
Indian	2.19***	(0.44)	1.75**	(0.33)	2.13***	(0.41)	0.63	(0.25)	0.83	(0.89)	0.54	(0.35)	0.26***	(0.08)	0.21***	(0.04)
Pakistani	1.20	(0.33)	1.61+	(0.44)	0.68	(0.18)	0.27*	(0.15)	0.00***	(0.00)	0.23*	(0.17)	0.16***	(0.07)	0.20***	(0.05)
Bangladeshi	1.22	(0.39)	1.64+	(0.49)	1.32	(0.33)	0.59	(0.28)	0.00***	(0.00)	0.39	(0.31)	0.23***	(0.10)	0.19***	(0.05)
Black Caribbean	0.89	(0.46)	1.54	(0.77)	1.24	(0.62)	0.62	(0.39)	0.00***	(0.00)	0.00***	(0.00)	1.24	(0.65)	0.35*	(0.17)
Black African	1.45	(0.57)	2.62**	(0.94)	2.58**	(0.79)	0.34	(0.27)	4.49	(6.94)	0.49	(0.37)	1.00	(0.35)	0.20***	(0.07)
Other	1.39	(0.52)	0.59	(0.27)	1.49	(0.46)	0.42	(0.26)	0.00***	(0.00)	0.00***	(0.00)	0.55	(0.22)	0.34***	(0.10)
Ref: Male																
Female	0.17***	(0.03)	1.10	(0.16)	0.70**	(0.09)	1.85**	(0.38)	1.94	(1.47)	0.63*	(0.12)	1.06	(0.14)	0.80*	(0.08)
Ref: No Special Education needs																
Special Education Needs	1.35	(0.53)	0.93	(0.43)	0.54	(0.24)	0.44	(0.33)	0.00***	(0.00)	2.20+	(1.04)	0.90	(0.38)	0.85	(0.27)
Ref: Did not attend Independent School																
Independent School	1.05	(0.51)	1.78	(0.73)	0.57+	(0.19)	0.77	(0.45)	0.00***	(0.00)	0.73	(0.52)	1.05	(0.37)	0.76	(0.18)
Ref: Did not take A Levels																
A Levels	0.94	(0.22)	1.51+	(0.35)	1.42+	(0.29)	3.57*	(1.78)	2.80	(3.58)	4.37*	(2.57)	0.77	(0.16)	0.30***	(0.04)
Observations	3,588											*** p<0.001, ** p<0.01, * p<0.05, + p<0.10				

Table 5 shows the results from a multinomial logit regression which examines the subject studied at university. The reference category is studying medical or physical sciences. The results show that there is no significant association between academic self-concept and studying maths, technology or engineering, classics or languages and creative arts and design compared to medical or physical sciences. Academic self-concept is associated with significantly lower odds of studying business administration or communication, lower odds of studying education and lower odds of studying 'other' degrees compared to medical and physical sciences. Academic self-concept is associated with higher odds of studying history or philosophy compared to medical and physical sciences. These findings suggest that there are significant differences by academic self-concept for subjects studied at university.

Discussion and conclusion

This paper uses data from Next Steps to examine correlates of academic self-belief and to explore the extent to which self-belief influences educational trajectories. The results show that most young people have high self-belief, but this varies significantly by the characteristics of the pupils, their families and the school they attend. Findings suggest that prior attainment is an important predictor of self-belief and also accounts for socio-economic differences in self-belief, reducing previously significant differences in parental social class, education⁷ and income to statistical insignificance. Over and above prior attainment and other individual and family characteristics, self-belief varies by ethnic background, gender, SEN and school type.

The results also show a positive and significant association between academic self-concept and A Level participation and a negative and significant association between academic self-concept and FE participation net of prior attainment and background characteristics. The results for HE participation are slightly more mixed; the models show that before taking into account A Levels, higher academic self-concept is associated with nine per cent higher odds of studying for a degree. However once A Level participation is taken into account the association between academic self-concept and higher education is not significant. This suggests that the pathway to university is important as academic self-concept is a significant predictor for continuing on the academic track by taking A Levels. Academic self-concept is found to be associated with higher education participation and studying at the research-intensive universities, which are considered high-status all else being equal. Moreover, there is some indication that academic self-concept is associated

⁷ The only statistically significant relationship that remains is for pupils with parents who are educated to level 1 or below (and only at the 10% level) and for those in rented housing (and only at the 5% level).

with the subjects studied at university, over and above background characteristics and prior attainment. However, academic self-concept does not fully account for the socio-economic differences in educational progression.

The implications of these findings would seem to suggest that if policy makers were to focus on increasing the self-belief of young people they would increase participation in A Level study and aspirations for studying at high-status universities. Teachers and parents could be encouraged to build this aspect into their educational interactions with young people, and programmes to instil confidence in young people could be incorporated into their learning. In this paper we are able to identify certain young people, who, all other things being equal, have lower belief in their academic ability than others and who could be the target of such interventions. Targeting these young people could raise their self-belief relative to others and subsequently increase the probability of these individuals progressing through the educational system. We are not able to fully account for all the factors that account for differences in self-belief, nor are we able to elaborate on what it is about self-belief that produces differences in educational progression and educational choices. It may be that individuals' increased self-belief already means they have their educational pathway through A-levels and university mapped out and are therefore more invested in making it happen through more time spent on revision and homework than their less confident peers who are more tentative about their academic future. Unpacking such mechanisms is an important part of understanding opportunities to widen participation in the later stages of the educational process. Nevertheless, this paper suggests that the study of academic self-concept is a fruitful area for future research in understanding social and economic success.

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