

# Your Life, Your Future: Baseline Survey Report

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# 1 Introduction

In this report we present an analysis of new data on educational expectations of secondary school students in England. The data was collected through an on-line survey administered in 15 secondary schools in the Essex Local Education Authority during the first half of the academic year 2019-2020. All students in year 10, irrespective of their family background and attainment, were invited to participate in the study. The total number of participants to the survey was 2,546 over a potential 3,087, for a response rate of 84.5%, including some double and incomplete responses.<sup>1</sup> The sample used in this report however ranges between 1,288 and 1,360 observations; this is because we only consider cases with valid responses on most of the variables used in the analysis.

The report is structured as follows. In Section 2 we describe the main variables used for the analysis. We divide these in three categories: outcomes, controls, and mediators. Among the *outcome* variables, we consider the subjective or perceived likelihood (or propensity) to stay on in full time education post-16 and the likelihood of doing a full-time apprenticeship, as well as the likelihood of achieving different qualifications, including A-levels and BTECs. We then consider the perceived likelihood of applying to university and of obtaining a degree. All these responses were reported on a scale of 0 to 100 using a slider, so to minimise the incidence of rounding.

Among the *control* variables, we consider first the level of education of the student's mother, which is also our main indicator of family socio-economic status (SES henceforth). Then, we take into account students' circumstances that are either fixed or difficult to change over time, such as gender, family composition (e.g. presence of siblings, single parent family), and a 'home learning environment index', which indicates whether students have access to good facilities at home, such as a desk, a computer, or a quiet room to study. We do not have a variable for ethnicity, but this is proxied by language spoken at home. We include among the control variables also some indicators of the student's non-cognitive or soft skills, such as the propensity to compete and to plan ahead, as well as a measure of the growth mindset and internal locus of control. There is a large literature in education which shows how these traits are strongly correlated with educational outcomes and expectations.

There are different variables that can explain students' expectations towards higher education, we call these the *mediators*. We first consider pecuniary (or monetary) factors, specifically the individual returns to a degree in terms of earnings and in terms of employment. We then consider informational barriers, and in particular the students' knowledge of the system of higher education financing in England. A final aspect we take into account are the non-pecuniary (or non-monetary) gains from attending university, which pertain to different domains, such as enjoyment of social life, of coursework (or job tasks), the management of finance, and the acquisition of life skills.

In Section 3 we relate the outcome variables to maternal education, which is our measure of the SES gradient, and other controls, i.e. individual characteristics and family environment (see section 3.1). The aim of this analysis is to understand whether there is a significant SES gradient in the outcomes of interest. For example, we want to know whether the perceived likelihood of participating in higher education differs significantly by maternal education even after taking into account differences by gender, family composition, and non-cognitive skills. Then, we consider the relationship between the mediators and the controls (section 3.2). Here we want to see whether, for instance, perceptions of graduate vs. non-graduate earnings differ by maternal education even after taking into account other differences across individuals. Finally, in Section 5, we analyse the direct relationship between outcomes and mediators, taking into account the other control variables. This

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<sup>1</sup>The total number of individual complete responses received was 2,397 for a response rate of 77.6%. The range of response differed significantly across schools, ranging from 29.1% to 98.4%. For this reason in the analysis that follows we will take into account school fixed-effects.

way we explore whether SES differences in outcomes can be explained by different sets of mediating variables in order to identify the main drivers of socio-economic differences in progression towards higher education.

## 2 Descriptive analysis of main variables

In this section we describe the main outcome variables, the control variables and the mediators used throughout our analysis.

### *Outcome variables*

Table 1 reports the means and standard deviations of the outcome variables that relate to educational aspirations. The first panel shows the students' responses to questions on post-16 continuation. As we can see, students indicate that the likelihood they will stay in full-time education after Year 11 is about 52%, while the likelihood they will enrol in a full-time apprenticeship is about 27%.<sup>2</sup> There are significant differences by SES. Figure A.1 shows that students whose mother has an A-level or a degree qualification are consistently more likely to report a higher propensity to stay in full time education and a lower propensity to choose the apprenticeship route.

The second group of variables in Table 1 reports the perceived likelihood of attaining a certain qualification level, conditional on continuing in education (full-time or part-time). For A-levels, this is about 63.9%, while for BTECs this is 42.4%.<sup>3</sup> Again, we see some marked SES differences in Figure A.2, with students from families where the mother has a high level of education being more likely to pursue A-level qualifications. Not much of a gradient is visible instead when looking at the probability to get a BTEC.

The third group of variables in Table 1 reports the perceived likelihood of applying to university and of getting a degree (conditional on applying). The likelihood of applying to university is on average 63.2%, which is very consistent with the likelihood of studying for A-levels. Conditional on attending university, students indicate a perceived likelihood of getting a degree of about 71.4%; this incidentally implies a perceived drop-out rate of about 28.6%, a lot higher than the actual level of about 7%. As expected, there are significant differences in the distribution of these likelihoods by maternal education. In families where the mother has a degree level qualification the perceived likelihood of applying to university is about 70%, but this goes down to 58% for students in families where the mother has a level of qualification at GCSE level or below (Figure A.3).

### *Control variables*

In Table 2 we report some information on the main characteristics of our sample of respondents. In terms of socio-economic background, we see that about 43% comes from families with relatively low levels of education (GCSEs or below), while a third of respondents are from families where the mother has a degree level qualification or above. A similar picture emerges when looking at paternal qualifications, but the number of missing or non-reported cases is in this case higher, so we prefer to use the maternal variable in our analysis.

As we can see, about 45.6% of the sample are male students, 7.7% indicate to speak English as an additional language, most of the students have at least one sibling (82%), and the percentage from a single-parent family is 24.9%. These characteristics make our sample quite representative of national averages across all students in England, apart from a lower proportion of those indicating English as an additional language (about 17% in recent years).

We capture other aspects of the student's home environment with a battery of questions about the availability of (i) a desk, (ii) a room of their own, (iii) a quiet place to study, (iv) a computer or

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<sup>2</sup>A third option, to combine work and study is 11% likely.

<sup>3</sup>Here the questions were asked separately, so the two options were presented not as mutually exclusive categories and the sum of probabilities is not necessarily 100.

tablet, (v) access to the internet, and (vi) access to books to help with school work. These variables are combined to construct what we call the “home learning environment” index. This index is used to reflect aspects of the student’s socio-economic background which might be correlated with parental income. So, this can be seen as an additional dimension of the socio-economic gradient to which we will pay particular attention. The method used to create this index is described in Table B.1, please note that by construction this variable has a mean of 0.

Another group of variables we will use in our set of controls are those related to non-cognitive traits. Students were asked various questions related to their attitudes and preferences, and we use here those variables that show the strongest correlation with higher education expectations. In particular, we look here at the student’s willingness to compete, to plan ahead, her growth mindset and internal locus of control. The latter has been found to be very strongly related to educational achievement in many other studies (such as the Millennium Cohort Study or the Next Steps). Table B.1 provides more detail about these variables and how they are constructed. Some of them have a range between 0 and 100, others are derived using different scoring methods and are standardised for ease of interpretation, which means they have a sample mean of 0 and a standard deviation of 1.

#### *Mediator variables*

The next table, Table 3, shows information on the mediator variables, i.e. possible mechanisms which mediate the effect of SES on educational expectations. Among these we consider: (i) the students’ perceptions of the pecuniary (or monetary) returns to acquiring a degree, (ii) knowledge barriers related to the complex system of higher education financing in England, and (iii) the students’ perception of the non-pecuniary benefits of attending university, where we look at different aspects of the university experience, including the managing of finances and the enjoyment of social life.

In terms of the pecuniary factors we consider two aspects: earnings, and probability of working. Here we asked students to indicate their annual earnings and perceived likelihood of working under two different scenarios: with and without a university degree. As for earnings, we look at three indicators, whether students perceive a negative return to getting a degree (a negative earning differential), whether they perceive a small or medium return (between 0 and 20K), and whether they perceive a large positive return (greater than 20K). The vast majority of students perceives positive earnings returns from getting a degree, with 39.6% indicating returns above 20K per year. There is some evidence of an SES gradient, but most of the 95% confidence interval bars overlap, to indicate that these SES differences (for example for earnings greater than 20K) are not statistically significant, see Figure A.4.

Things are a bit different when looking at the perceived likelihood of working. Table 3 shows that on average the perceived likelihood of being in employment is about 6.5 percentage points higher if the student had a degree level qualification. Figure A.5 reports the distribution of the difference in the likelihood of being in work (with degree vs. without degree) by maternal education. Here we clearly see evidence of a significant SES gradient, with students from families where the mother has a degree perceiving a clear gain in terms of employment (see Figure A.4).

Next we consider the understanding of the system of higher education financing. Students were asked different questions about the way in which tuition and maintenance costs can be funded. There were three sets of questions, all described in detail in Table B.2 in Appendix B. Some of these questions were quite general, while some were specific to the financing of tuition fees or maintenance grants. As Table 3 shows, students gave on average 51.2% correct answers to the general questions (a battery of 8), and they were slightly more knowledgeable about tuition fees (69.6% correct) than maintenance grants (62.7% correct). However, there does not seem to be a strong SES gradient in students’ understanding of the system of HE financing. As, we can see in Figure A.6, there are some differences by maternal education, but none of these is statistically significant from the other. It therefore seems that, perhaps contrary to our expectations, students from families with more

educated parents do not have a better knowledge of how to fund their higher education studies.

The last mediating factors we consider are related to the non-pecuniary returns to university. As before, we asked students to imagine themselves in two different scenarios, one in which they were working after the age of 18, and one in which they were attending university instead. For each of these scenarios, we asked students to indicate how much they would enjoy different aspects of their life on a scale from 0 to 100. We considered four domains: (i) the enjoyment of social activities, (ii) the enjoyment (or difficulty encountered) of the activities themselves, i.e. coursework or job tasks, (iii) the management of finances, and (iv) the value of accumulating life skills. For each domain we created different questions, some positively and some negatively phrased. The order in which the scenarios were presented to the students varied randomly across respondents, and we let the order of the questions for each scenario change randomly as well in order to avoid possible anchoring effects. We then calculated the difference in the reported values between “life at university” and “life at work”.<sup>4</sup> These differences are reported in the bottom part of Table 3 and are pretty small on average, but with relatively wide dispersion (the standard deviation is quite high, about one quarter to one fifth of the range of possible values). The only significant difference we see is in the management of finance, where students on average - and perhaps not surprisingly - perceive a negative utility from being at university.

Figure A.7 describes how the non-pecuniary returns to university vary by maternal education, our indicator for SES. What is very interesting here is that in most cases we see marked - and statistically significant - differences between the perceived returns of students whose parents have a degree level qualification and those who have parents with lower educational attainment (A-level qualifications or GCSEs). Specifically, the returns are higher for students coming from more advantaged families. For example, we see clearly that students whose mothers had an A-level or GCSE educational qualification perceive a negative return to going to university in terms of social life, while for those whose mother had a degree the return is positive. The same happens when considering the enjoyment of coursework (vs. job tasks). In relation to the management of finance, this clearly is much less of a worry for students whose parents have attended university. The difference in terms of life skill and daily activities are less marked, but again there is a suggestion that students from more advantaged family backgrounds perceive higher returns to attending university. This is not surprising, and it relates to the idea that information transmission from parent to child is very important especially when it comes to the non-pecuniary (and therefore much more difficult to measure) aspects of the university experience.

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<sup>4</sup>See also Table B.3 in Appendix B

Table 1: Outcomes

Outcomes	Mean	sd	Min	Max	N
POST GCSE					
Likelihood of studying full-time	51.973	28.210	0	100	1,360
Likelihood of doing a full-time apprenticeship	26.989	23.489	0	100	1,360
POST GCSE (EDUCATION)					
Likelihood of doing A-levels	63.853	28.886	0	100	1,296
Likelihood of doing BTECs	42.370	24.919	0	100	1,288
UNIVERSITY					
Likelihood of applying to university	63.168	30.612	0	100	1,360
Likelihood of getting a degree	74.434	26.914	0	100	1,359

Note: The likelihood of studying A-levels and BTECs is asked to respondents who reported a non-zero likelihood of studying full-time. The likelihood of applying to university is asked to everybody and it is conditional on obtaining the required qualifications. The likelihood of finishing university is asked to everybody and it is conditional on obtaining the required qualifications, applying and obtaining a place.

Table 2: Controls

Controls	Mean	sd	Min	Max	N
MOTHER'S EDUCATION					
Mother's education: GCSE or below	0.429	0.495	0	1	1,360
Mother's education: A-level	0.250	0.433	0	1	1,360
Mother's education: Degree	0.321	0.467	0	1	1,360
INDIVIDUAL/FAMILY CHARACTERISTICS					
Male	0.456	0.498	0	1	1,360
English not first language	0.077	0.267	0	1	1,360
Whether any sibling	0.820	0.384	0	1	1,360
Single or no parent	0.249	0.433	0	1	1,360
Home environment index (standardized)	0.000	1.000	-5	1	1,360
NON COGNITIVE SKILLS					
Willingness to compete	62.819	25.859	0	100	1,360
Planning ahead	60.521	24.551	0	100	1,360
Growth Mindset (standardized)	-0.000	1.000	-3	2	1,360
Internal locus of control (standardized)	0.000	1.000	-5	3	1,360

Note: The 'home learning environment' index is constructed using the students's answers to questions about the availability of (i) a desk, (ii) a room of their own, (iii) a quiet place to study, (iv) a computer or tablet, (v) access to the internet, and (vi) access to books to help with school work. For more details about the way this indicator is constructed, and for more information on the non-cognitive skills measures, please refer to Table B.1 in Appendix B

Table 3: Mediators

Mediators	Mean	sd	Min	Max	N
<b>PECUNIARY FACTORS</b>					
Diff Earnings negative or zero	0.116	0.321	0	1	1,360
Diff Earnings between 0 and 20k	0.353	0.478	0	1	1,360
Diff Earnings greater than 20k	0.396	0.489	0	1	1,360
Diff Earnings missing	0.135	0.342	0	1	1,360
Diff probability of working	6.479	28.920	-100	100	1,360
<b>KNOWLEDGE OF BARRIERS</b>					
% corrects financing of HE (8 items)	0.512	0.218	0	1	1,360
% corrects financing of tuition fees (5 items)	0.696	0.271	0	1	1,360
% corrects financing of maintenance costs (5 items)	0.627	0.240	0	1	1,360
<b>NON PECUNIARY FACTORS</b>					
Enjoyment of Social Life	-0.787	19.031	-99	100	1,360
Enjoyment of coursework or job tasks	-1.351	19.689	-100	71	1,360
Managing finance	-5.494	25.223	-100	96	1,360
Life skills and daily activities	1.197	18.107	-95	92	1,360

Note: The indicators for knowledge of barriers are the share of correct answers the respondent gave to three batteries of questions about: i) financing of Higher Education, ii) financing of tuition fees, and iii) financing of maintenance costs. See also Table B.2 in Appendix B. For more details on the variables representing the non-pecuniary factors, please refer to Table B.3 in Appendix B.

### 3 Socio-economic differences in outcomes

In this section we look at the presence of an SES gradient in students' educational expectations. We start by considering the raw correlation between maternal education and our outcome variables (e.g. the perceived likelihood of studying full time, of getting A-levels etc.), then we gradually introduce other variables in the model and examine what effect these have on the SES gradient.

Table 4 presents the results for the first of our outcome variables, the perceived likelihood of studying full time after age 16. In the first column - or specification (1) - we look at the raw association between the outcome and maternal education. The first coefficient reflects the effect of having a mother with an A-level or equivalent qualification with respect to having a mother with GCSE level or lower level qualification (our omitted category). The size of the coefficient indicates that students whose mothers have an A-level are 3.6 percentage points more likely to indicate they want to continue in full-time education as opposed to students whose mother have a lower qualification level. The coefficient is statistically significantly different from zero (which would indicate no difference) at the 10% level, which means that the effect is not very precisely estimated.<sup>5</sup> The second coefficient indicates that the perceived likelihood of continuing in full time education for students whose mothers have a degree is 6 percentage points higher than the perceived likelihood of continuing int full time education for students whose mothers have a GCSE qualification or lower (the omitted category). Now the coefficient is statistically significantly different from zero at the 1%

<sup>5</sup>Usually we consider a 5% level of significance the threshold between a precise and an imprecise estimate in statistical terms.

level of precision, which indicates that there is only 1 percent chance that the result is zero.

In specification (2) we add to our model some characteristics of the respondent's family. These variables could have an independent effect on the outcome, but could also capture part of the correlation between maternal education and educational expectations. Specifically, we introduce controls for the student's gender, language spoken at home, and family composition. Of all these, the main effect is the one of gender. Here we see that male students are 8.8 percentage points less likely to indicate they would like to continue in full time education after the age of 16 than female students (our omitted category). This difference is very large and represents a change of almost 17% with respect of the mean (which is 51.99 as indicated at the bottom of the table). What we also see is that introducing these variables attenuates to some extent the effect of maternal education, although not in a very significant way.

We next include our indicator for the home learning environment. This variable reflects access to better facilities at home (a desk, a computer etc.), and could be seen as an indicator of wealth or family income. We consider how its introduction in our model affects the correlation between the outcome and maternal education.<sup>6</sup> As we can see, the effect of the home learning environment index is positive and statistically significant. Having an index of 1 (which means having access to all the different facilities mentioned in the question), as opposed to having an index of 0, increases the likelihood of studying full time by 4.25 percentage points. Introducing this index also partly explains some of the correlation between the outcome variable and maternal education, as we see that the coefficient for mothers with an A-level qualification becomes smaller and statistically insignificant (i.e. not different from zero), while the coefficient for mothers with a degree becomes smaller in magnitude. However, even accounting for the home learning environment index does not completely eliminate the SES gradient, and we can see that students with mothers with a degree are still almost 5 percentage points more likely to continue in full time education than students with mothers with GCSE level qualification or lower.

Our final specification in column (4) takes into account the student's non-cognitive traits. Here we see mainly an effect of attitudes towards planning, which reflect the ability to be patient and program ahead, as well as a strong effect of the internal locus of control, a belief that one's actions can affect outcomes. What we are mainly interested in, however, is the effect that the introduction of these variables has on the SES gradient, and we can see that there is quite a change in the coefficient representing the effect of maternal education at degree level. This has now reduced to 3.3 percentage points, although it remains statistically different from zero.

Overall, what we learn from this exercise is that there is a significant SES gradient in relation to the perceived likelihood of continuing in full time education after the age of 16. This is only partly explained by individual characteristics (specification 2), different access to resources at home (specification 3), and individual non-cognitive traits (specification 4). How big are these SES differences though? We can see this clearly in Figure 1, where we plot the coefficients shown in specification (4) of Table 4. Here each bar represents the size of the coefficient, and the vertical lines show the size of the 95% confidence intervals.<sup>7</sup> As we can see, the effect of maternal education on the outcome is generally positive, and for degree level qualifications is just about statistically significant. So, there is an SES gradient in the likelihood to continue in full time education, but this is not large. Visually, we see that the most relevant variables that explain this outcome are the gender of the student and some individual-specific attitudes or traits, such as the internal locus of control.

We perform a similar analysis on all the other outcome variables. In Table 5 we look for example at the perceived likelihood of doing an apprenticeship after the age of 16. Here the first thing to notice is that the association with maternal education is negative, that is the higher the SES the

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<sup>6</sup>Alternatively, we could interpret this coefficient as another aspect of the SES gradient.

<sup>7</sup>If the confidence interval crosses the 0 line, this indicates that the effect is not statistically significant from zero.



lower the likelihood of choosing the apprenticeship route. The magnitude of the coefficients shown in specification (1) indicates that the perceived likelihood of doing an apprenticeship for students whose mothers have a degree is about 4 percentage points lower than that of students whose mothers have a GCSE qualification or lower (the omitted category).

Interestingly, there is a very large association with gender. In specification (2) we see that male students are more than 10 percentage point more likely than female students to continue with an apprenticeship. This is an increase of 37% over the mean (26.989 at the bottom of the table). The correlation with language spoken at home is instead negative (about 5.6 percentage points), to indicate that students from ethnic minorities are in general less attracted to this route. As we add the home learning environment index in specification (3), and non-cognitive traits in specification (4), the correlation between the outcome and maternal education becomes weaker although it never becomes totally insignificant. All in all, as we can see in Figure 2, there is not much of an SES gradient in relation to doing an apprenticeship, gender and ethnicity are here clearly the dominant factors.

In Table 6 we look at the perceived likelihood of studying for A-levels. Here we see a very large SES differential, in that students whose mother has an A-level qualification indicate to be almost 7 percentage points more likely to pursue A-levels than students whose mother has a GCSE qualification or lower. The differential in respect of students coming from families where the mother has a degree is even higher, almost 14 percentage points. Again, we see other differences in educational expectations, with boys being less likely and ethnic minorities more likely to favour the A-level route. As we control for other variables, using the home learning environment index (in specification 3) or our measures of non-cognitive skills, the SES differential reduces gradually, but it remains highly significant. This is something we can clearly appreciate visually in Figure 3.

By contrast, we do not detect much of a difference in the perceived likelihood of studying for BTECs according to maternal education. This is shown in Table 7 and Figure 4. Here we see that the variables representing maternal education never exhibit a significant correlation with the outcome irrespective of the specification used. We also see minimal differences by gender or ethnicity, and a relatively small effect of other variables. The only exception is a significant correlation with some non-cognitive attitudes, such as ability to plan ahead and internal locus of control. What this means is that plans to study for BTECs are not systematically explained by any of the individual and family characteristics we consider. At this stage of the education process (the students are in Year 10), there does not seem to be much that can explain which students are more likely to choose BTEC qualifications.

We next consider the presence of a socio-economic gradient in the perceived likelihood of applying to university. The results shown in Table 8 and Figure 5 are remarkably similar to what we saw for A-levels. There is evidence of a significant and very large association with maternal education, which is partly reduced as we introduce more individual and family characteristics, but stays relevant even with our full set of controls. Once again, we see large and significant differentials by gender and language spoken at home, our proxy for ethnicity. This points out that a group of particular interest for policies and interventions aimed at increasing higher education participation is “boys from a white family background”, who seem to have much lower educational expectations than other groups of the population.

The last of the educational outcomes we analyse is the perceived likelihood of obtaining a degree. This is conditional on achieving the required qualifications to apply to university, applying to university, and being accepted. In other words, when we ask this question to the students, we ask them to consider the likelihood of completing their university education net of any barrier to access. If socio-economic disadvantage influences only access to higher education, there is no reason why we should see a correlation between this outcome and maternal education.

Yet, Table 9 shows that there is a significant association between maternal education the likelihood

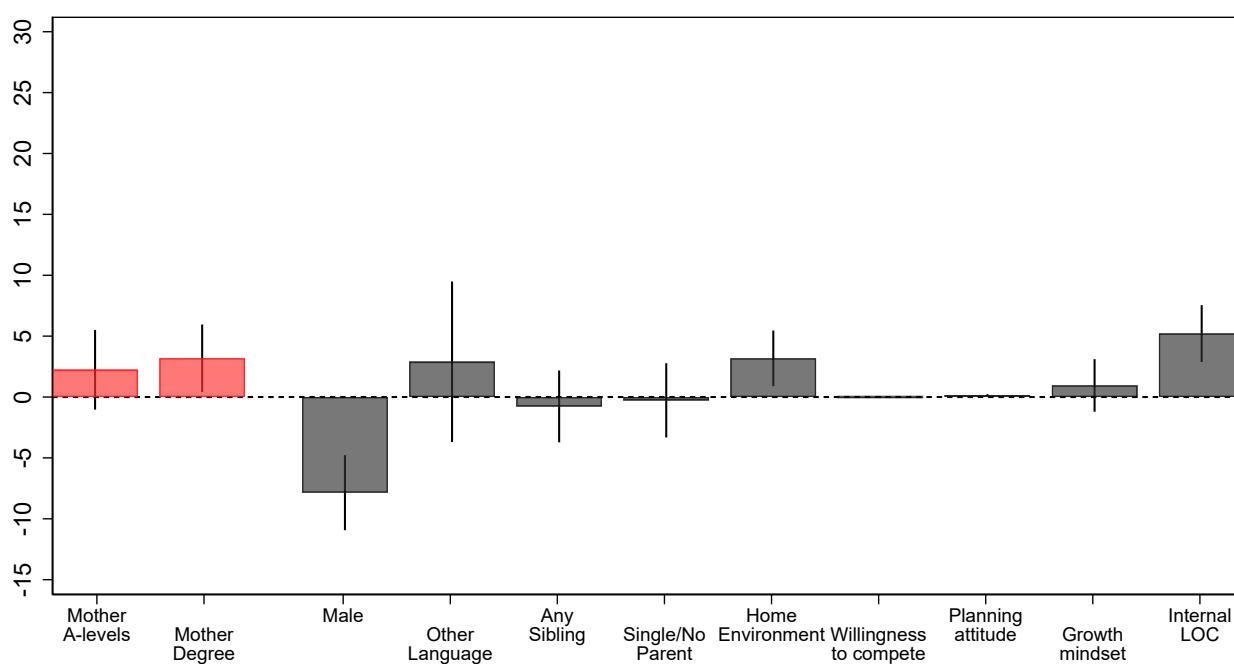
of getting a degree. The differentials by maternal qualifications are smaller than for the likelihood of applying to university, but still relevant in terms of magnitude and statistically significant even once we control for a large set of individual and family characteristics. Indeed, the perceived likelihood of obtaining a degree is almost 5 percentage point higher for students whose mother has a degree qualification than for students whose mother has a GCSE or lower level educational attainment (see specification 4). The corresponding differential for students whose mother has an A-level qualification is about 3 percentage points. Figure 6 puts these SES differences in context, showing that the effect of maternal education is not as high as that of ethnicity (which has the largest coefficient), but it is more comparable to the association between the outcome and gender or some of the non-cognitive traits.

Table 4: Likelihood of studying full time

	(1)	(2)	(3)	(4)
Mother's education: A level	3.596* (1.816)	3.311* (1.724)	2.716 (1.660)	2.237 (1.534)
Mother's education: Degree	5.989*** (1.257)	5.541*** (1.267)	4.860*** (1.297)	3.185** (1.300)
Male		-8.784*** (1.520)	-8.700*** (1.529)	-7.853*** (1.446)
Other Language		3.371 (3.314)	3.575 (3.411)	2.895 (3.093)
Any Sibling		-1.791 (1.352)	-0.781 (1.447)	-0.771 (1.385)
Single/No Parent		-2.455* (1.387)	-0.914 (1.421)	-0.274 (1.430)
Home environment index			4.247*** (1.164)	3.175*** (1.071)
Willingness to compete				0.002 (0.029)
Planning attitude				0.145*** (0.041)
Growth Mindset (standardized)				0.950 (1.011)
Internal locus of control				5.210*** (1.097)
Constant	48.632*** (0.582)	54.572*** (1.613)	54.252*** (1.666)	44.308*** (3.964)
Observations	1360	1360	1360	1360
R-squared	0.044	0.070	0.090	0.154
Mean dependent variable	51.973	51.973	51.973	51.973

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 1: Likelihood of studying full time: estimated coefficients from the full model



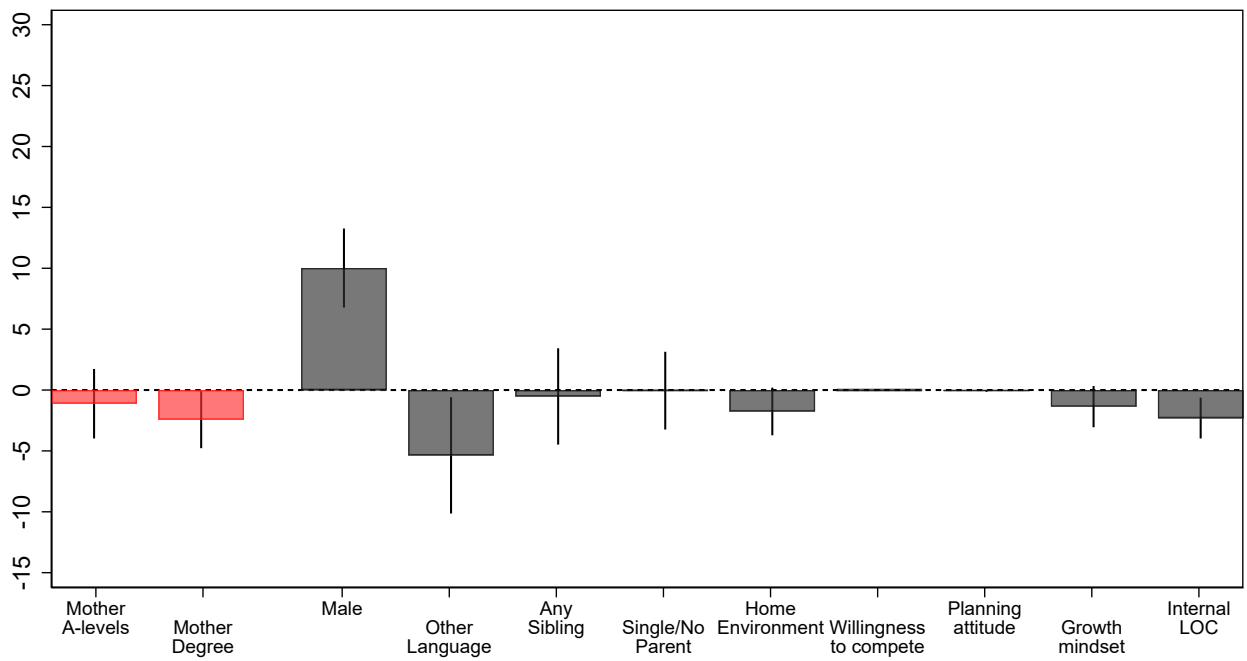
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 4. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 5: Likelihood of being in an apprenticeship

	(1)	(2)	(3)	(4)
Mother's education: A level	-1.854 (1.728)	-1.574 (1.566)	-1.252 (1.483)	-1.123 (1.338)
Mother's education: Degree	-4.154*** (0.825)	-3.615*** (0.991)	-3.246*** (1.036)	-2.438** (1.097)
Male		10.435*** (1.560)	10.389*** (1.581)	10.018*** (1.522)
Other Language		-5.617** (2.431)	-5.728** (2.377)	-5.367** (2.241)
Any Sibling		0.059 (1.750)	-0.489 (1.859)	-0.527 (1.856)
Single/No Parent		1.084 (1.641)	0.249 (1.540)	-0.053 (1.497)
Home environment index			-2.302** (0.912)	-1.761* (0.918)
Willingness to compete				-0.002 (0.021)
Planning attitude				-0.082** (0.030)
Growth Mindset (standardized)				-1.364 (0.795)
Internal locus of control				-2.303** (0.787)
Constant	26.409*** (0.491)	21.638*** (1.598)	21.812*** (1.659)	27.719*** (3.614)
Observations	1360	1360	1360	1360
R-squared	0.035	0.086	0.095	0.122
Mean dependent variable	26.989	26.989	26.989	26.989

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 2: Likelihood of being in an apprenticeship: estimated coefficients from the full model



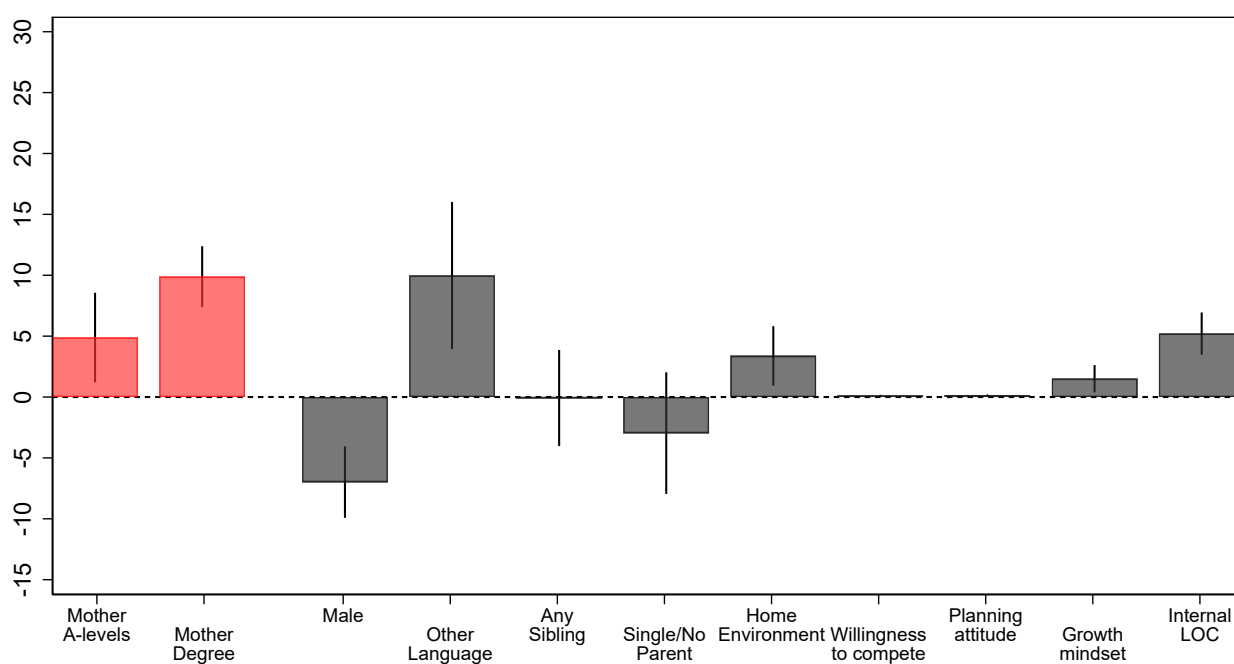
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 5. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 6: Likelihood of studying A-levels

	(1)	(2)	(3)	(4)
Mother's education: A level	6.951*** (1.658)	6.255*** (1.535)	5.602*** (1.662)	4.885** (1.724)
Mother's education: Degree	13.804*** (1.159)	12.744*** (1.173)	11.993*** (1.118)	9.881*** (1.173)
Male		-7.496*** (1.661)	-7.314*** (1.618)	-6.985*** (1.376)
Other Language		11.089*** (3.563)	10.850*** (3.524)	9.977*** (2.834)
Any Sibling		-1.049 (1.750)	0.033 (1.719)	-0.083 (1.853)
Single/No Parent		-5.040* (2.644)	-3.467 (2.523)	-2.962 (2.342)
Home environment index			4.462*** (1.175)	3.373** (1.147)
Willingness to compete				0.117*** (0.030)
Planning attitude				0.138*** (0.031)
Growth Mindset (standardized)				1.501** (0.526)
Internal locus of control				5.205*** (0.816)
Constant	53.237*** (0.589)	58.433*** (2.178)	57.879*** (2.057)	41.494*** (3.233)
Observations	1296	1296	1296	1296
R-squared	0.075	0.106	0.126	0.213
Mean dependent variable	63.853	63.853	63.853	63.853

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. The likelihood of studying A-levels is asked to respondents who reported a non-zero likelihood of studying full-time. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 3: Likelihood of studying A-levels: estimated coefficients from the full model



Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 6. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

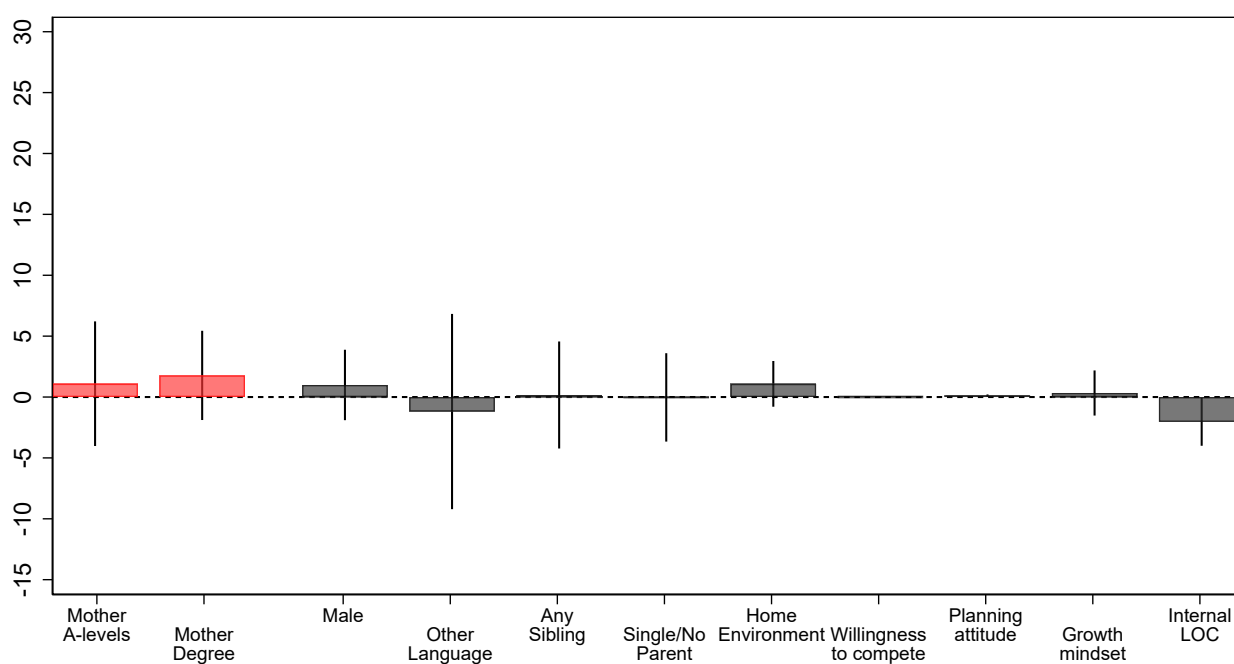


Table 7: Likelihood of studying BTECs

	(1)	(2)	(3)	(4)
Mother's education: A level	1.458 (2.496)	1.504 (2.448)	1.374 (2.425)	1.094 (2.401)
Mother's education: Degree	2.291 (1.792)	2.370 (1.780)	2.220 (1.775)	1.775 (1.719)
Male		0.847 (1.299)	0.880 (1.303)	0.990 (1.356)
Other Language		-0.888 (3.577)	-0.944 (3.583)	-1.193 (3.762)
Any Sibling		-0.533 (2.216)	-0.327 (2.216)	0.167 (2.062)
Single/No Parent		0.177 (1.739)	0.482 (1.770)	-0.031 (1.703)
Home environment index			0.867 (0.874)	1.081 (0.880)
Willingness to compete				0.006 (0.031)
Planning attitude				0.116** (0.046)
Growth Mindset (standardized)				0.331 (0.869)
Internal locus of control				-2.039** (0.921)
Constant	39.380*** (0.961)	39.431*** (2.270)	39.328*** (2.258)	31.743*** (3.527)
Observations	1288	1288	1288	1288
R-squared	0.039	0.040	0.041	0.054
Mean dependent variable	42.370	42.370	42.370	42.370

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. The likelihood of studying BTECs is asked to respondents who reported a non-zero likelihood of studying full-time. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 4: Likelihood of studying BTECs: estimated coefficients from the full model



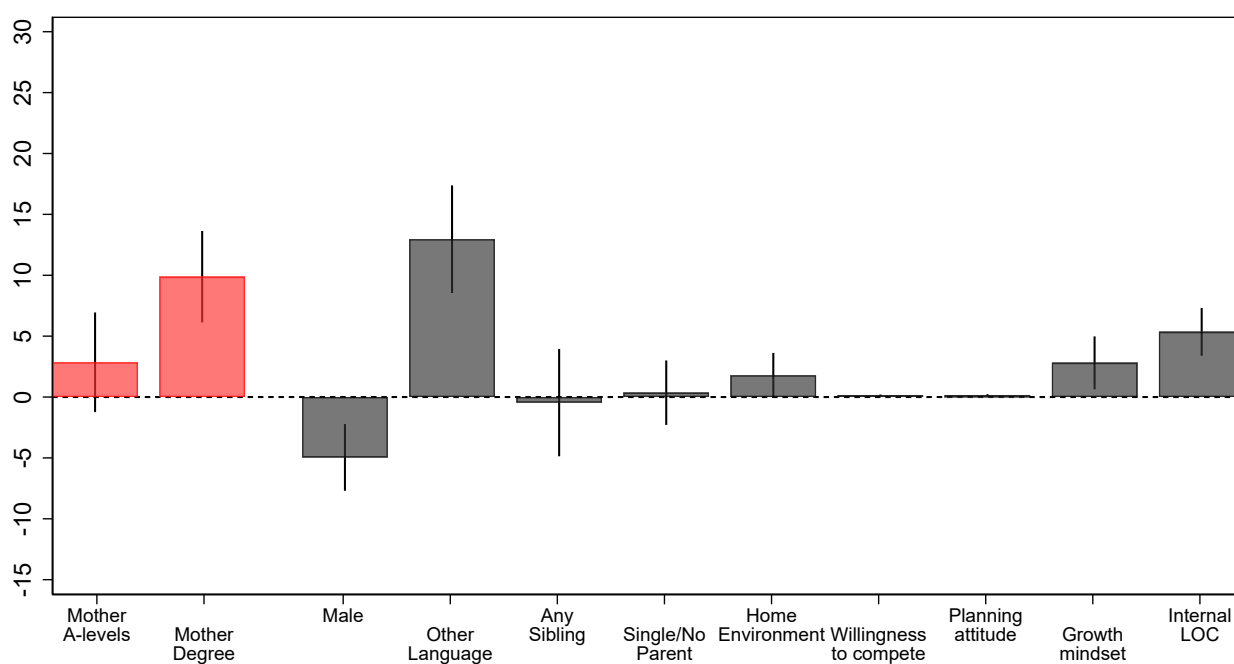
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 7. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 8: Likelihood of applying to university

	(1)	(2)	(3)	(4)
Mother's education: A level	4.467** (1.561)	3.999** (1.571)	3.540** (1.558)	2.853 (1.920)
Mother's education: Degree	13.825*** (1.849)	12.740*** (1.892)	12.214*** (1.840)	9.881*** (1.761)
Male		-5.265*** (1.610)	-5.200*** (1.624)	-4.960*** (1.285)
Other Language		13.578*** (2.698)	13.736*** (2.634)	12.963*** (2.074)
Any Sibling		-1.261 (1.950)	-0.482 (1.971)	-0.460 (2.069)
Single/No Parent		-1.329 (1.429)	-0.141 (1.263)	0.357 (1.242)
Home environment index			3.275*** (0.998)	1.780* (0.864)
Willingness to compete				0.155*** (0.025)
Planning attitude				0.168*** (0.032)
Growth Mindset (standardized)				2.808** (1.020)
Internal locus of control				5.348*** (0.921)
Constant	55.591*** (0.659)	58.899*** (2.293)	58.651*** (2.342)	37.730*** (3.074)
Observations	1360	1360	1360	1360
R-squared	0.075	0.096	0.106	0.218
Mean dependent variable	63.168	63.168	63.168	63.168

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. The likelihood of applying to university is asked to everybody and it is conditional on obtaining the required qualifications, i.e. the survey question asks "Suppose you gain the required qualifications to apply to university. How likely is it that you will apply to university?". Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 5: Likelihood of applying to university: estimated coefficients from the full model



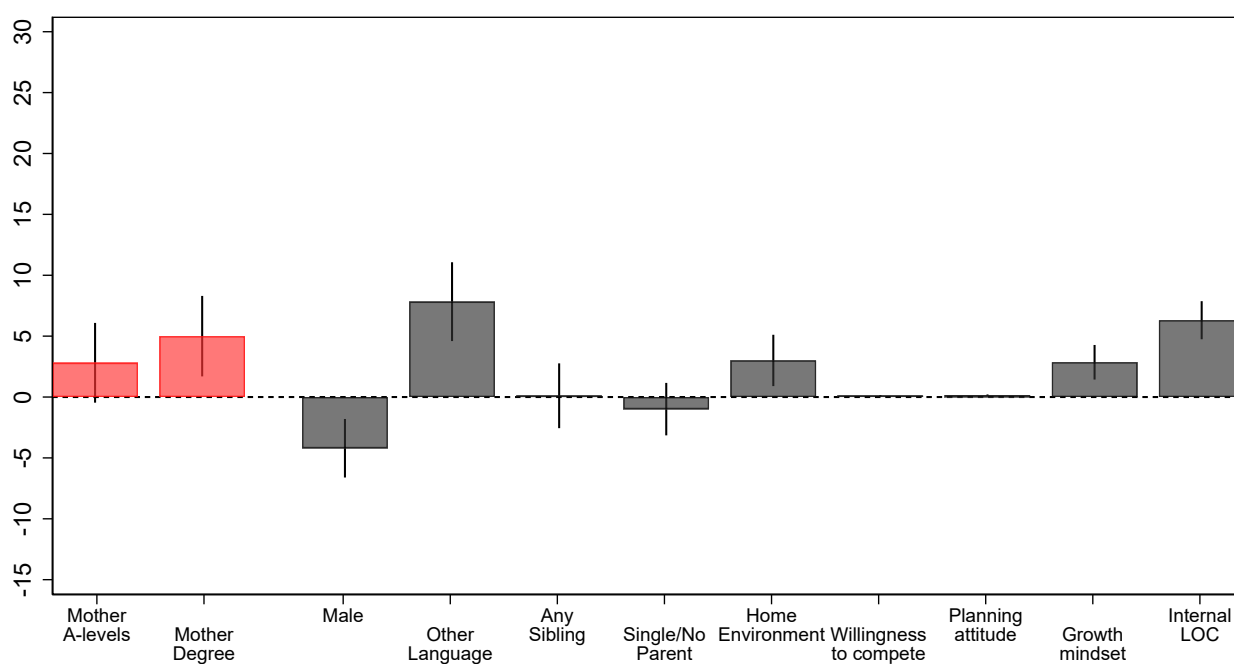
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 8. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 9: Likelihood of obtaining a degree

	(1)	(2)	(3)	(4)
Mother's education: A level	4.399** (1.506)	3.987** (1.535)	3.374** (1.548)	2.812* (1.537)
Mother's education: Degree	8.802*** (1.684)	7.975*** (1.868)	7.267*** (1.811)	4.998*** (1.550)
Male		-4.765*** (1.333)	-4.702*** (1.311)	-4.206*** (1.128)
Other Language		8.424*** (2.014)	8.642*** (2.010)	7.831*** (1.518)
Any Sibling		-0.921 (1.059)	0.153 (1.094)	0.103 (1.249)
Single/No Parent		-3.381*** (1.060)	-1.716 (1.078)	-0.994 (1.011)
Home environment index			4.563*** (1.085)	3.004*** (0.989)
Willingness to compete				0.110*** (0.022)
Planning attitude				0.163*** (0.024)
Growth Mindset (standardized)				2.855*** (0.666)
Internal locus of control				6.306*** (0.734)
Constant	66.572*** (0.663)	70.152*** (0.897)	69.812*** (0.868)	51.675*** (2.335)
Observations	1359	1359	1359	1359
R-squared	0.045	0.062	0.087	0.232
Mean dependent variable	74.434	74.434	74.434	74.434

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. The likelihood of finishing university is asked to everybody and it is conditional on obtaining the required qualifications, applying and obtaining a place, i.e. the survey question asks "Suppose you gain the required qualifications to apply to university, apply, and get a place. How likely is it that you will finish your studies?". Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 6: Likelihood of obtaining a degree: estimated coefficients from the full model



Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 9. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

## 4 Socio-economic differences in mediators

In this section we look at the mediator variables, as described in Table 3. These are: (i) students' perceptions of the pecuniary returns to a university degree in terms of earnings and probability of working, (ii) the understanding of different aspects of the system of HE financing, and (iii) students' perceptions of the non-pecuniary benefits of attending university. As for the previous analysis, we are interested here in whether or not there is an SES gradient in any of these mediating factors. If such a gradient is identified, this might suggest there is some scope for an intervention aimed at raising participation of students from lower socio-economic backgrounds in university education.

We start by analysing the students' perceived pecuniary returns to HE looking at the difference between the expected earnings with and without a degree. In Table 10 we transform this difference into a binary variable that assumes value 1 if the student perceives this earning difference to be above 20K per year.<sup>8</sup> As we can see in specification (1), there is no indication that students' earnings expectations differ by maternal education. In specification (2) we add individual characteristics. Here we see that male students generally expect a higher return in terms of graduate vs. non-graduate earnings, and so do students whose language at home is not English. We then add our home learning environment index in specification (3). We see a positive coefficient associated to this variable, to indicate that students from wealthier families perceive higher earnings returns from higher education. However the effect is small: having a value of the index equal to one (as opposed to 0) increases by 2.9 percentage points the likelihood of reporting a graduate vs. non-graduate earning differential of 20K or above, this is only a 7.3% percent increase on the mean (see last row of the table). Adding the non-cognitive factors does not change anything, as we can see from the size and significance of the coefficients in specification (4).

All this is clearly visible when looking at Figure 7. The red bars show that students whose mothers have a degree perceive higher earnings returns to a university degree than students whose mothers have only a GCSE qualification or lower, but this effect is not statistically significant at the conventional level. The main variables associated with higher earnings returns to a university degree are gender and language spoken at home. Here we see that female students (the omitted category) and those whose first language is not English, perceive a significantly higher return to a degree in terms of earnings. This is a finding that is in line with earlier findings showing how these students are more likely to apply to university.

We next describe the results we obtain when looking at the difference in the expected probability of working with and without a degree, shown in Table 11. Here we see a clear difference in the perceived employment returns to a university degree for students whose mother has a degree qualification as compared to students whose mother has either a GCSEs or lower educational attainment. Specification (1) shows, for example, that a student coming from a family where the mother has a degree will perceive the difference between the employment probability with and without a degree to be almost 9 percentage point higher than a student coming from a family where the mother has a lower level of education. This is a really large difference, especially compared to the mean difference of 6.48, and indicates the presence of a marked SES gradient. Differences between students whose mother has an A-level qualification and those whose mother has GCSEs or lower attainment are not statistically significant (and even negative) instead. Other variables that show a strong association with the employment returns to a university degree are gender, language spoken at home and (in specification 4) the internal locus of control. Interestingly, the home learning environment index exhibits no significant correlation with the outcome in this case.

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<sup>8</sup>We conducted the analysis using also a continuous variable and the results are broadly similar. We prefer here to use these indicator variables as this allows us to look at specific part of the distribution, which is where we see most of the differences by SES.

Figure 8 reports these findings in a visual format. What is very clear from this figure is that while the employment returns to a degree are positively associated with the education level of the parent, the effect is not linear (i.e. the more educated the parent the higher the returns). Rather, there is a stark difference between families where the mother has a degree and those where this is not the case. This suggests that there is something very specific in having a parent with a degree that goes beyond a general effect of SES on these perceived returns. The figure also shows very effectively that by far the strongest predictor of higher employment returns to a university degree is the ethnic background of the student, with those who do not speak English at home as their first language reporting much higher gains of obtaining a university education.

The second set of variables we use as mediators relates to the knowledge of the system of financing of higher education in England. Here students were asked three batteries of questions and we sum the number of correct answers to calculate the % of correct answers in each battery.<sup>9</sup> The results of our analysis on the overall system of HE financing are presented in Table 12. Here we see that there is a slight association between maternal education and the outcome variable, but the magnitude of the coefficient is quite small. A student whose mother has a degree has a percentage of correct answer 2.9 percentage points higher than that of a student whose mother has GCSEs or lower educational attainment. This relationship becomes totally statistically insignificant in specification (4), as we account for more differences across individuals.

Table 13 shows instead that when we focus on the financing of tuition fees, we see some strong SES associations. Clearly, students from families with higher levels of education are better informed. It is not possible to know why there is such a gap in knowledge by SES. This could be because when parents are more educated they transmit more information about the system, or they understand it better, or it could simply be that the more advantaged students perceive a higher likelihood to attend university (as we saw in the previous section) and are therefore more likely to get information about the financing of university studies. Once again we see differences by gender, showing that male students are generally less well informed. Interestingly, we were expecting an effect of having siblings, mainly older siblings, on this variable, but we cannot detect much of an association here. Non-cognitive traits, such as having a growth mindset and an enhanced internal locus of control are positively associated with the outcomes. All this is also clearly evidenced in Figure 10.

By contrast there is not much of an SES gradient in knowledge about the financing of maintenance costs. Here Table 14 shows that the coefficients on the maternal education variables are always very small and statistically indistinguishable from zero. The only important association are those related to gender, the home environment index, and some aspects of non-cognitive skills.

The next set of mediating variables relates to the non-pecuniary aspects of attending university. Here we consider: (i) the perceived enjoyment of social life, (ii) the perceived enjoyment of coursework (or work tasks), (iii) the management of finance, and (iv) the accumulation of life skills through daily activities. For each of these domains we ask students to think about two different scenarios, one in which they are enrolled at university after the age of 18, and one in which they are working instead. We elicit their perceived enjoyment of different activities or ask them to rate these different aspects of the experience in each of these two scenarios using a 0-100 scale, then take the difference and calculate the “perceived return”.<sup>10</sup>

We start by considering the enjoyment of social life. The analysis on this variable is shown in Table 15, and its related Figure 12. As we can see, there is a large, positive, and statistically significant difference in the perceived returns to going to university in terms of social life between students whose mother has a degree and those whose mother has a GCSE qualification or lower. There is instead no statistically significant difference between students whose mother has an A-level

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<sup>9</sup>For more detail on these variable, see Table B.2 in Appendix B.

<sup>10</sup>For more detail on these variable, see Table B.3 in Appendix B.



and those whose mother has lower educational attainment. This means that there is a clear divide between students with and without graduate parents. This difference persists even when we add to the model more explanatory variables. Even though there are significant positive social life returns to a degree by ethnicity and by some non-cognitive skills, the divide between students with graduate parents and those without remains large - in the range of 4.5 percentage points - and statistically relevant.

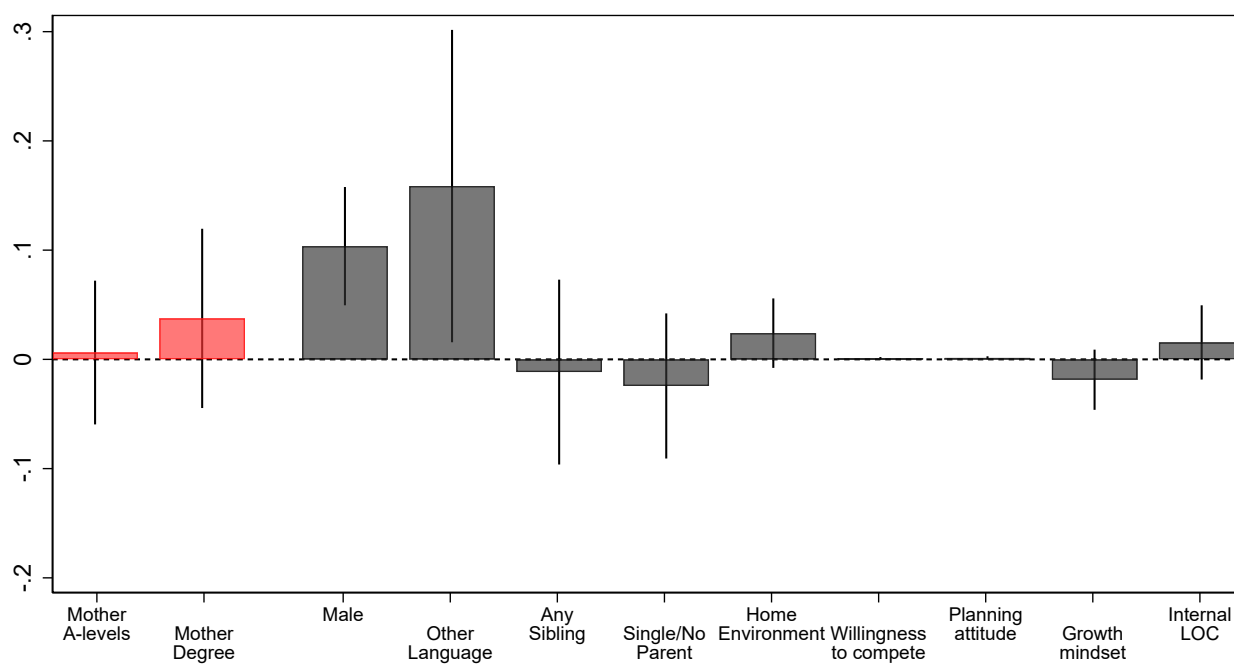
Similar results are found when analysing the returns in terms of enjoyment of coursework in Table 16, those in terms of the management of finance in Table 17, and finally those pertaining to aspects of daily life and accumulation of new skills in Table 18. In all these cases the perceived returns to a degree are higher for students whose mother has a degree and for students whose first language at home is not English. Very little else explains differences in the non-pecuniary returns, even gender in this case exhibits no significant association with the dependent variable.

Table 10: Difference in earnings with and without a degree  $\geq 20000$ 

	(1)	(2)	(3)	(4)
Mother's education: A level	0.026 (0.030)	0.021 (0.030)	0.017 (0.030)	0.006 (0.031)
Mother's education: Degree	0.071 (0.042)	0.058 (0.040)	0.054 (0.039)	0.037 (0.038)
Male		0.102*** (0.025)	0.102*** (0.025)	0.104*** (0.025)
Other Language		0.162** (0.066)	0.163** (0.066)	0.159** (0.067)
Any Sibling		-0.021 (0.040)	-0.014 (0.039)	-0.012 (0.040)
Single/No Parent		-0.033 (0.032)	-0.023 (0.031)	-0.024 (0.031)
Home environment index			0.029** (0.014)	0.024 (0.015)
Willingness to compete				0.001** (0.000)
Planning attitude				0.001* (0.001)
Growth Mindset (standardized)				-0.019 (0.013)
Internal locus of control				0.016 (0.016)
Constant	0.379*** (0.015)	0.357*** (0.048)	0.355*** (0.048)	0.213*** (0.062)
Observations	1360	1360	1360	1360
R-squared	0.017	0.036	0.039	0.052
Mean dependent variable	0.396	0.396	0.396	0.396

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: equal to one if the difference in expected earnings with and without a degree is greater than 20000 pounds, 0 otherwise. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 7: Difference in earnings with and without a degree  $\geq 20000$ : estimated coefficients from the full model



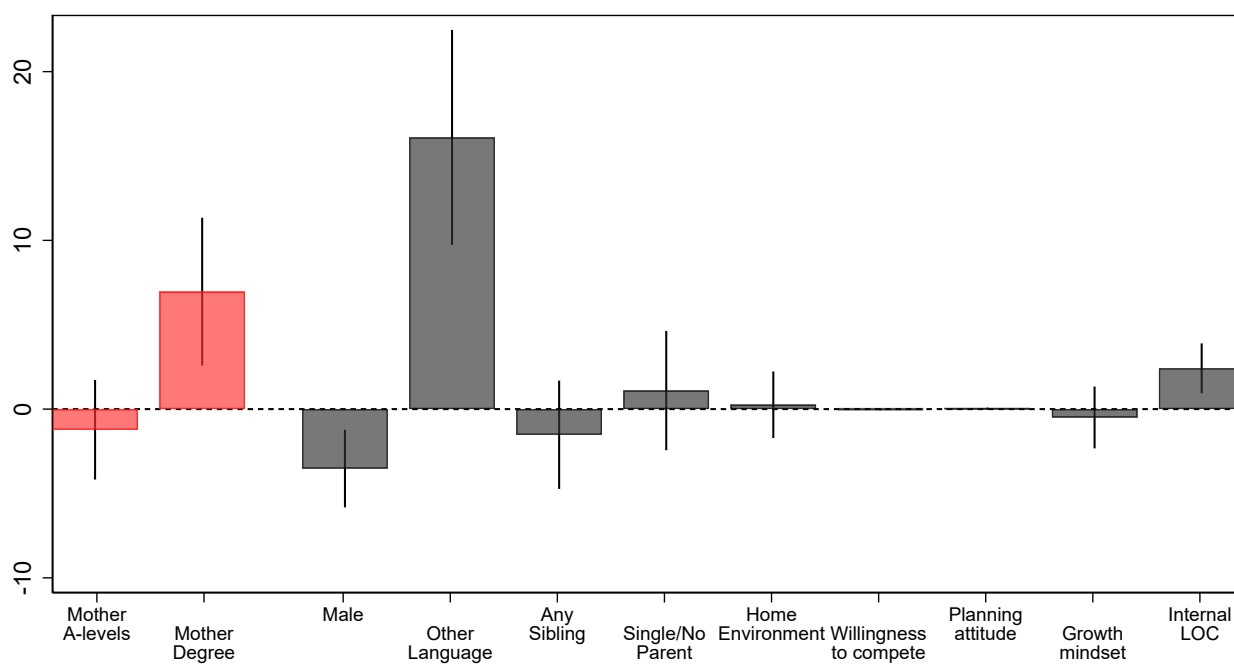
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 10. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 11: Difference in the expected probability of working with and without a degree

	(1)	(2)	(3)	(4)
Mother's education: A level	-0.475 (1.637)	-0.922 (1.481)	-1.013 (1.439)	-1.226 (1.383)
Mother's education: Degree	8.774*** (1.921)	7.613*** (2.058)	7.509*** (2.016)	6.961*** (2.055)
Male		-3.928*** (1.126)	-3.915*** (1.124)	-3.523*** (1.080)
Other Language		16.274*** (3.011)	16.305*** (3.051)	16.101*** (2.991)
Any Sibling		-1.598 (1.425)	-1.444 (1.490)	-1.521 (1.506)
Single/No Parent		0.545 (1.614)	0.780 (1.650)	1.098 (1.659)
Home environment index			0.647 (0.980)	0.256 (0.926)
Willingness to compete				-0.010 (0.027)
Planning attitude				0.031 (0.029)
Growth Mindset (standardized)				-0.495 (0.860)
Internal locus of control				2.419*** (0.693)
Constant	6.379*** (0.698)	8.736*** (1.636)	8.687*** (1.645)	7.356** (2.936)
Observations	1360	1360	1360	1360
R-squared	0.047	0.073	0.074	0.081
Mean dependent variable	6.479	6.479	6.479	6.479

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 8: Difference in the expected probability of working with and without a degree: estimated coefficients from the full model



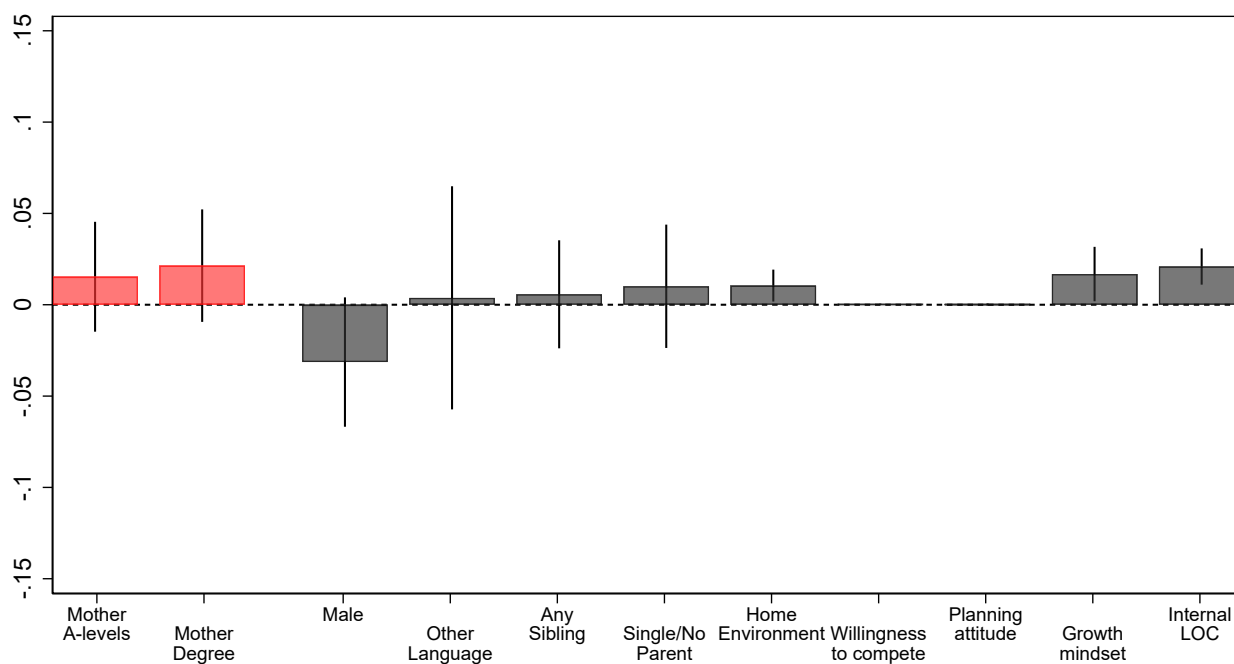
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 11. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 12: % correct answers about the financing of HE (8 items)

	(1)	(2)	(3)	(4)
Mother's education: A level	0.017 (0.016)	0.017 (0.015)	0.015 (0.015)	0.015 (0.014)
Mother's education: Degree	0.029* (0.015)	0.029* (0.014)	0.026* (0.015)	0.021 (0.014)
Male		-0.032* (0.017)	-0.032* (0.017)	-0.031* (0.017)
Other Language		0.005 (0.030)	0.006 (0.030)	0.004 (0.029)
Any Sibling		0.003 (0.014)	0.007 (0.014)	0.006 (0.014)
Single/No Parent		0.001 (0.015)	0.007 (0.015)	0.010 (0.016)
Home environment index			0.016*** (0.004)	0.010** (0.004)
Willingness to compete				0.000*** (0.000)
Planning attitude				0.000 (0.000)
Growth Mindset (standardized)				0.017** (0.007)
Internal locus of control				0.021*** (0.005)
Constant	0.505*** (0.007)	0.516*** (0.014)	0.515*** (0.014)	0.476*** (0.024)
Observations	1360	1360	1360	1360
R-squared	0.058	0.063	0.068	0.091
Mean dependent variable	0.512	0.512	0.512	0.512

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: share of correct answers in a 8 items battery on financing of Higher Education. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 9: % correct answers about the financing of HE (8 items): estimated coefficients from the full model



Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 12. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

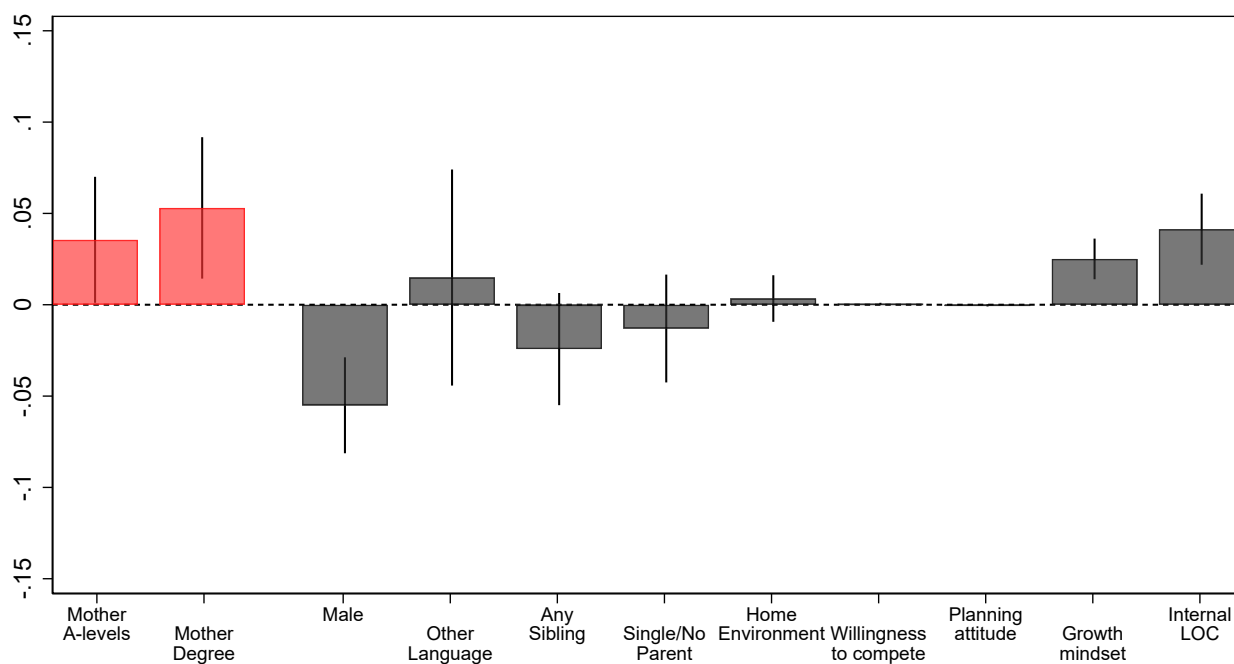
Table 13: % correct answers about the financing of tuition fees (5 items)

	(1)	(2)	(3)	(4)
Mother's education: A level	0.037** (0.017)	0.035* (0.017)	0.033* (0.016)	0.036** (0.016)
Mother's education: Degree	0.063*** (0.020)	0.060** (0.020)	0.058** (0.020)	0.053** (0.018)
Male		-0.056*** (0.014)	-0.056*** (0.014)	-0.055*** (0.012)
Other Language		0.016 (0.029)	0.017 (0.029)	0.015 (0.028)
Any Sibling		-0.023* (0.013)	-0.020 (0.013)	-0.024 (0.014)
Single/No Parent		-0.025* (0.013)	-0.020 (0.014)	-0.013 (0.014)
Home environment index			0.012* (0.006)	0.003 (0.006)
Willingness to compete				0.000* (0.000)
Planning attitude				-0.000 (0.000)
Growth Mindset (standardized)				0.025*** (0.005)
Internal locus of control				0.041*** (0.009)
Constant	0.680*** (0.008)	0.731*** (0.018)	0.730*** (0.019)	0.710*** (0.030)
Observations	1360	1360	1360	1360
R-squared	0.031	0.043	0.045	0.083
Mean dependent variable	0.696	0.696	0.696	0.696

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: share of correct answers in a 5 items battery on financing of tuition fees. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.



Figure 10: % correct answers about the financing of tuition fees (5 items): estimated coefficients from the full model



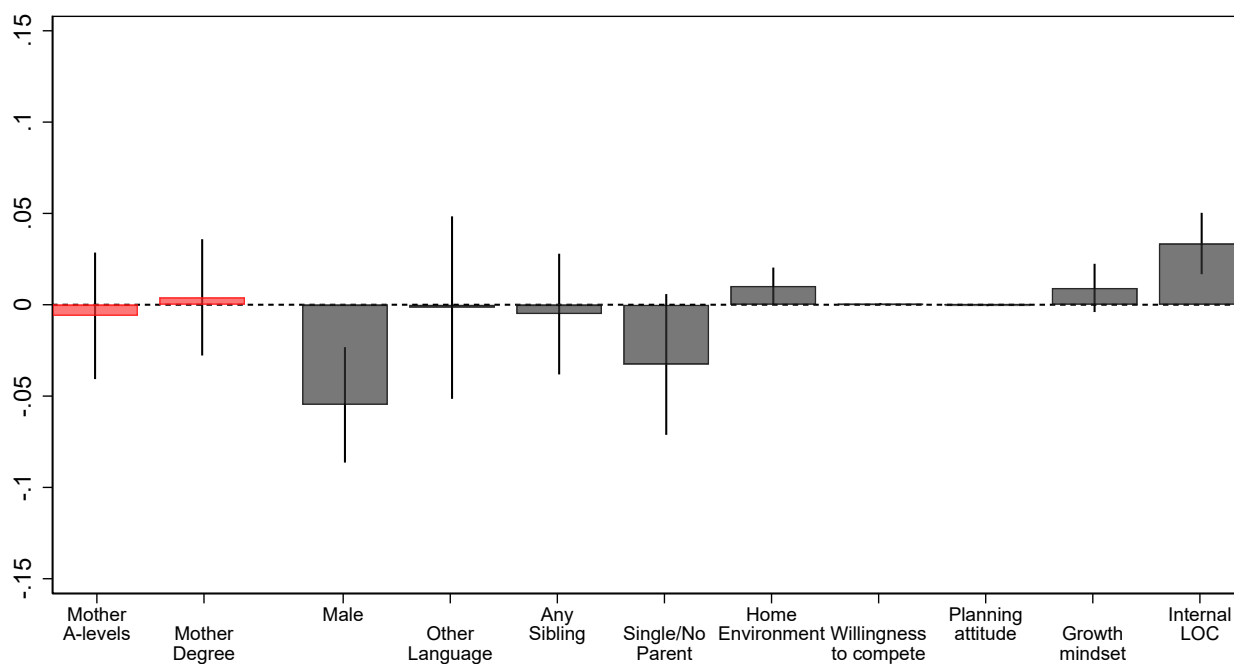
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 13. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 14: % correct answers about the financing of maintenance costs (5 items)

	(1)	(2)	(3)	(4)
Mother's education: A level	-0.001 (0.017)	-0.004 (0.016)	-0.006 (0.016)	-0.006 (0.016)
Mother's education: Degree	0.015 (0.016)	0.012 (0.016)	0.009 (0.016)	0.004 (0.015)
Male		-0.056*** (0.015)	-0.056*** (0.016)	-0.055*** (0.015)
Other Language		-0.001 (0.024)	-0.000 (0.025)	-0.002 (0.023)
Any Sibling		-0.006 (0.015)	-0.002 (0.015)	-0.005 (0.016)
Single/No Parent		-0.044** (0.019)	-0.038* (0.019)	-0.033* (0.018)
Home environment index			0.017*** (0.004)	0.010** (0.005)
Willingness to compete				0.000** (0.000)
Planning attitude				-0.000 (0.000)
Growth Mindset (standardized)				0.009 (0.006)
Internal locus of control				0.034*** (0.008)
Constant	0.623*** (0.007)	0.666*** (0.015)	0.665*** (0.015)	0.644*** (0.026)
Observations	1360	1360	1360	1360
R-squared	0.014	0.032	0.036	0.063
Mean dependent variable	0.627	0.627	0.627	0.627

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: share of correct answers in a 5 items battery on financing of maintenance costs. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 11: % corrects answers about the financing of maintenance costs (5 items): estimated coefficients from the full model



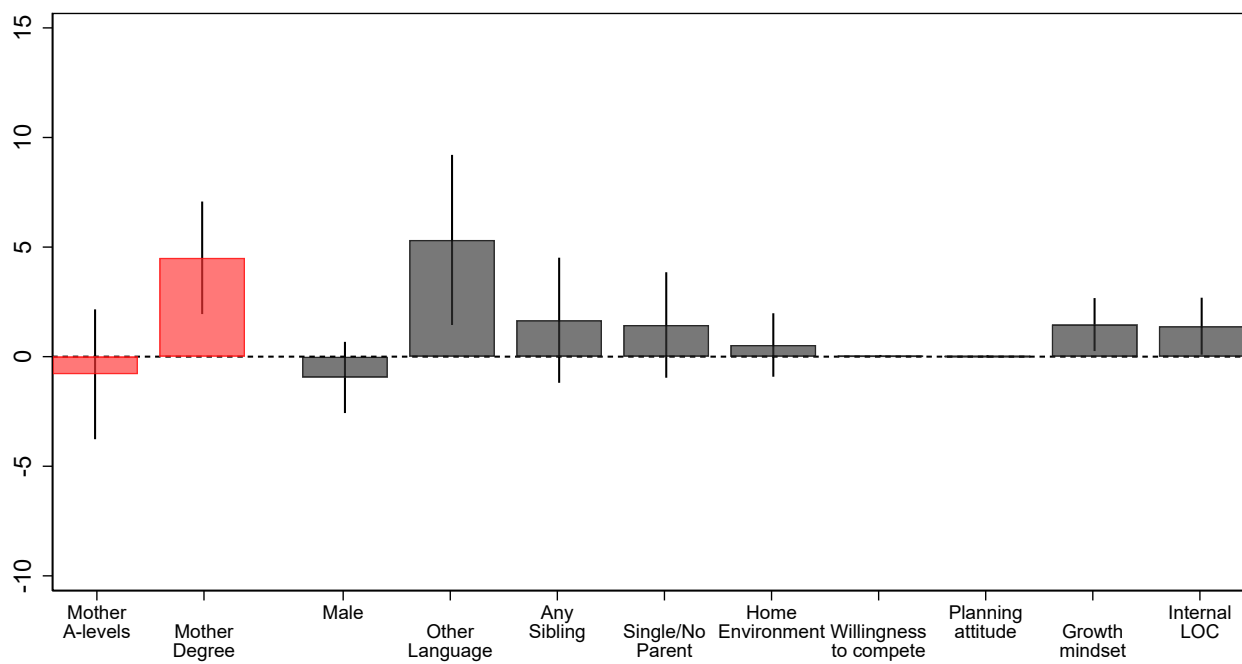
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 14. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 15: Difference in the enjoyment of social life at university vs. at work

	(1)	(2)	(3)	(4)
Mother's education: A level	-0.617 (1.409)	-0.711 (1.442)	-0.841 (1.435)	-0.804 (1.390)
Mother's education: Degree	5.365*** (1.337)	5.027*** (1.362)	4.879*** (1.344)	4.510*** (1.204)
Male		-0.918 (0.695)	-0.900 (0.682)	-0.948 (0.762)
Other Language		5.405*** (1.816)	5.449** (1.850)	5.325** (1.820)
Any Sibling		1.525 (1.401)	1.745 (1.338)	1.662 (1.339)
Single/No Parent		0.906 (1.074)	1.241 (1.190)	1.445 (1.129)
Home environment index			0.925 (0.665)	0.532 (0.680)
Willingness to compete				0.041** (0.017)
Planning attitude				0.011 (0.027)
Growth Mindset (standardized)				1.464** (0.567)
Internal locus of control				1.389** (0.610)
Constant	-1.883*** (0.600)	-3.167** (1.376)	-3.237** (1.351)	-7.020*** (2.381)
Observations	1360	1360	1360	1360
R-squared	0.052	0.059	0.061	0.080
Mean dependent variable	-0.787	-0.787	-0.787	-0.787

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: Average of 'Enjoy social life at university-enjoy social life not at university', 'Lose contact at university-lose contact not at university' (reverted to account for the negative framing), 'Feel lonely at university feel lonely not at university' (reverted to account for the negative framing). Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 12: Difference in the enjoyment of social life at university vs. at work: estimated coefficients from the full model



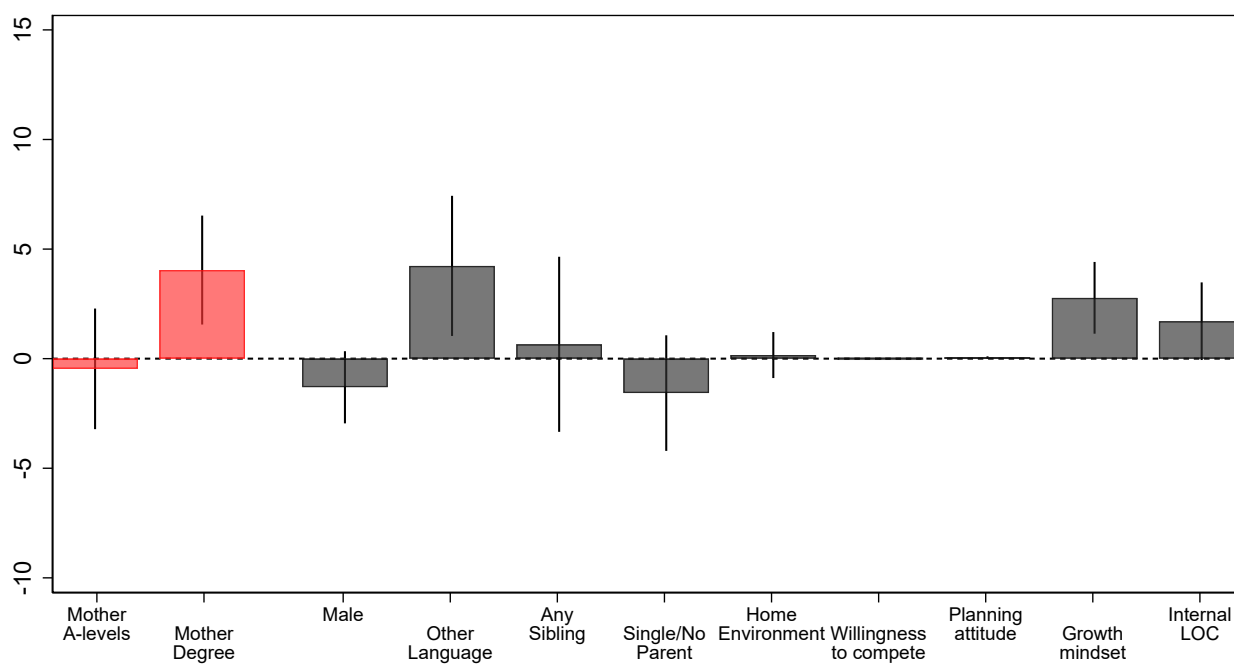
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 15. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 16: Difference in the enjoyment of coursework at university or tasks at work

	(1)	(2)	(3)	(4)
Mother's education: A level	-0.366 (1.267)	-0.584 (1.260)	-0.674 (1.245)	-0.465 (1.291)
Mother's education: Degree	5.037*** (1.255)	4.587*** (1.214)	4.484*** (1.205)	4.043*** (1.166)
Male		-1.491* (0.799)	-1.478* (0.796)	-1.306 (0.772)
Other Language		4.462** (1.535)	4.493** (1.554)	4.233** (1.500)
Any Sibling		0.521 (1.905)	0.673 (1.878)	0.655 (1.874)
Single/No Parent		-2.124 (1.294)	-1.891 (1.295)	-1.571 (1.237)
Home environment index			0.642 (0.473)	0.165 (0.492)
Willingness to compete				0.001 (0.019)
Planning attitude				0.049* (0.027)
Growth Mindset (standardized)				2.775*** (0.768)
Internal locus of control				1.709* (0.831)
Constant	0.251 (0.521)	0.969 (1.539)	0.921 (1.525)	-3.458 (2.734)
Observations	1360	1360	1360	1360
R-squared	0.057	0.064	0.065	0.104
Mean dependent variable	-1.351	-1.351	-1.351	-1.351

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: average of: 'Material interesting at university-material interesting not at university', 'Coursework too hard at university-work tasks too hard not at university' (reverted to account for the negative framing), 'Be successful academically at university-be successful not at university'. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 13: Difference in the enjoyment of coursework at university or tasks at work: estimated coefficients from the full model



Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 16. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

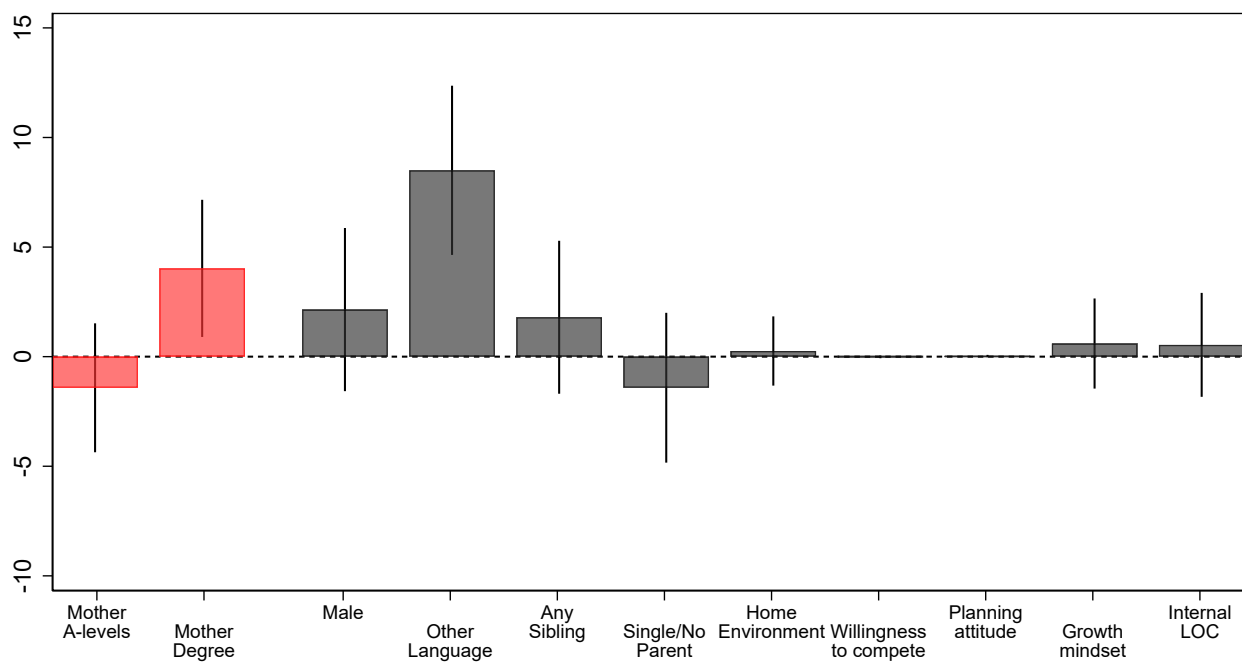
Table 17: Difference in managing finance at university vs. at work

	(1)	(2)	(3)	(4)
Mother's education: A level	-1.104 (1.404)	-1.370 (1.402)	-1.425 (1.387)	-1.421 (1.380)
Mother's education: Degree	4.985*** (1.515)	4.294** (1.459)	4.231** (1.469)	4.027** (1.468)
Male		2.008 (1.640)	2.016 (1.642)	2.148 (1.746)
Other Language		8.598*** (1.821)	8.617*** (1.819)	8.502*** (1.811)
Any Sibling		1.673 (1.599)	1.766 (1.617)	1.798 (1.637)
Single/No Parent		-1.644 (1.629)	-1.501 (1.569)	-1.418 (1.603)
Home environment index			0.393 (0.680)	0.258 (0.741)
Willingness to compete				-0.008 (0.030)
Planning attitude				0.029 (0.025)
Growth Mindset (standardized)				0.600 (0.965)
Internal locus of control				0.539 (1.113)
Constant	-4.397*** (0.566)	-6.428*** (1.493)	-6.458*** (1.486)	-8.050** (3.084)
Observations	1360	1360	1360	1360
R-squared	0.038	0.049	0.049	0.052
Mean dependent variable	-5.494	-5.494	-5.494	-5.494

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: average of: 'Get by financially at university-get by financially not at university', 'Hard to repay debt at university-hard to repay debt not at university' (reverted to account for the negative framing). Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.



Figure 14: Difference in managing finance at university vs. at work: estimated coefficients from the full model



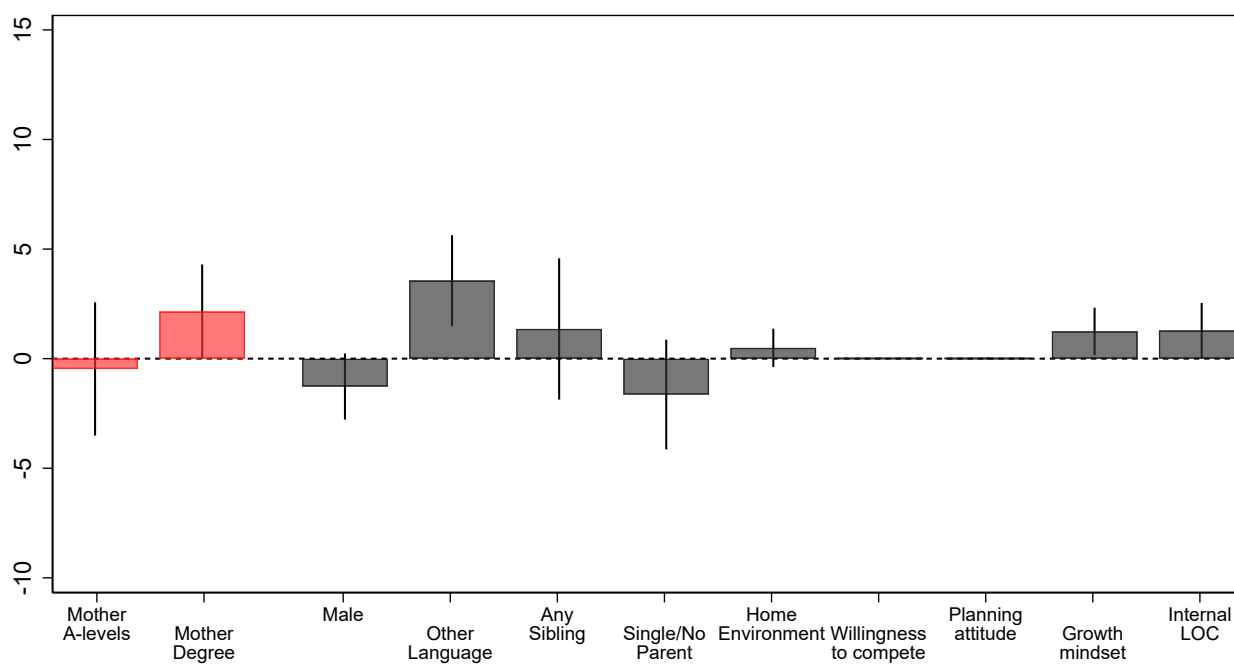
Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 17. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

Table 18: Difference in life skills and daily activities at university vs. at work

	(1)	(2)	(3)	(4)
Mother's education: A level	-1.104 (1.404)	-1.370 (1.402)	-1.425 (1.387)	-1.421 (1.380)
Mother's education: Degree	4.985*** (1.515)	4.294** (1.459)	4.231** (1.469)	4.027** (1.468)
Male		2.008 (1.640)	2.016 (1.642)	2.148 (1.746)
Other Language		8.598*** (1.821)	8.617*** (1.819)	8.502*** (1.811)
Any Sibling		1.673 (1.599)	1.766 (1.617)	1.798 (1.637)
Single/No Parent		-1.644 (1.629)	-1.501 (1.569)	-1.418 (1.603)
Home environment index			0.393 (0.680)	0.258 (0.741)
Willingness to compete				-0.008 (0.030)
Planning attitude				0.029 (0.025)
Growth Mindset (standardized)				0.600 (0.965)
Internal locus of control				0.539 (1.113)
Constant	-4.397*** (0.566)	-6.428*** (1.493)	-6.458*** (1.486)	-8.050** (3.084)
Observations	1360	1360	1360	1360
R-squared	0.038	0.049	0.049	0.052
Mean dependent variable	-5.494	-5.494	-5.494	-5.494

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings. All models include school fixed effects. Dependent variable: average of 'Learn life skills at university- learn life skills not at university', 'Struggle with daily activities at university-struggle with daily activities not at university' (reverted to account for the negative framing), 'Keep active at university-keep active not at university'. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 15: Difference in life skills and daily activities at university vs. at work: estimated coefficients from the full model



Note: Each bar reflects the size of the coefficient estimated in specification (4) of Table 18. The vertical lines represent the 95% confidence interval of the point estimate. The bars in red represent the effect for students whose mother has an A-level qualification or a degree level qualification - as opposed to GCSE qualifications or below - on the dependent variable.

## 5 Socio-economic differences in outcomes after accounting for the mediators

In this section we consider the way in which outcomes and mediators interact together. Specifically, here we try to understand whether the mediators we discussed in Section 4 can explain the SES gradient in outcomes identified in Section 3.

We start in Table 19 by looking at the perceived likelihood of staying on in full time education after the age of 16. Specification (1) in this table is the equivalent of specification (4) in Table 4, and indicates the presence of a small albeit positive SES gradient. Specifically, we see that there is a difference of 3.3 percentage points in the probability of continuing in full time education between students whose mother has a degree and those whose mother has a GCSE qualification or below (omitted category).

We start by adding the first set of mediators to the model. Specification (2) now includes the perceived pecuniary returns to a degree, in relation to both earnings and employment differentials. These variables have a positive association with the outcome, i.e. the higher the perceived earnings or employment gains associated with a university degree, the higher the perceived likelihood to stay on in education. There is also a change in the coefficients related to maternal education, with the difference between students whose mother has higher educational attainment and those whose mother has lower educational attainment becoming smaller and less statistically significant. This tells us that perceptions about the pecuniary benefits of a degree are important to explain a part of the SES gradient in this outcome.

We next introduce a second set of mediators, those related to the knowledge of the system of HE financing. We see that these variables correlate with the probability to stay on in education. As we would expect, students who have a better understanding of the system exhibit a higher perceived likelihood to continue in full-time education. This could indicate a causal effect, but equally could just be an indication of the fact that students who are more interested in pursuing higher education are better informed.

The coefficients on the maternal education variables become smaller and are now not significantly different from zero. This suggests that if all students reported the same pecuniary returns to a degree and had similar knowledge of the system of higher education financing, we should not find any difference in the perceived likelihood to stay on in full time education after 16 by maternal education. In other words, we would eliminate the SES differential for this outcome.

Adding the non-pecuniary returns to attending university has a small additional effect. Only one of the variables capturing the non-pecuniary returns seem to be significant in this case though, with students who perceive to enjoy more the coursework having a higher likelihood to stay on in full time education after 16. There is a further reduction in the coefficients on maternal education, but this is now relatively small.

Figure 16 reports these results using a different framework. Here we plot the two coefficients representing our measure of SES and we show how the size of these coefficients changes as we add different set of mediators. This makes us appreciate which set of mediators have the strongest effect on the SES gradient. For example, the coefficient for mothers with a degree is initially different from zero and we can see how it becomes smaller and not statistically different from zero as we include more explanatory factors, and especially after taking into account the pecuniary returns to a degree. A very similar pattern of results is shown in relation to the perceived likelihood of doing an apprenticeship, as shown in Table 20 and Figure 17.

We are not always able to eliminate (statistically speaking) the SES differential in outcomes by adding to our model different sets of mediators. For example, let's consider the perceived likelihood of doing A-levels in Table 21. As shown in specification (1), the SES differential is quite large and

statistically significant. Once we account for the earnings and employment returns to a degree in specification (2), we see this differential becoming a bit smaller, but not very significantly so. Adding the variables on informational barriers again reduces slightly the observed SES differences, but still they remain large and highly significant. Adding the non-pecuniary factors (specification 4) has an additional effect, but again the change in the gradient is very small.

Figure 18 shows visually the change in the coefficients representing the association between maternal education and the perceived likelihood to pursue A-level qualifications as we add different mediators. The coefficient representing mothers with a degree becomes clearly progressively smaller, but it remains statistically different from zero. The fact that the bars representing the 95% confidence intervals overlap for each different value of the coefficient also indicates that none of the mediators is able to explain a very significant portion of the SES gradient in this case.

In Table 22 and Figure 19 we look at the perceived likelihood of doing BTECs. Here there is no significant SES gradient to start with, and we also see that none of the mediators are associated with the outcome. In general, it seems that very few of the variables we observe exhibit a significant association with this outcome. One possibility to consider is that the students do not know very much about their BTEC options at this stage in their educational development, and their answer reflect a wide range of uncertainty that makes the analysis very difficult.

We consider now the way in which the mediators affect the SES gradient in relation to the perceived likelihood to apply to university. Table 23 specification (1) provides evidence of a strong association of this outcome with maternal education for students whose mother have a degree-level qualification. The magnitude of the relationship is large, about 10 percentage points over an average of 63.2. The introduction of pecuniary returns to university in specification (2) brings down the association with maternal education to 7.6 percentage point, a decrease of 23% in the magnitude of the coefficient, which remains however statistically significantly different from zero. There is a limited effect of knowledge barriers related to the system of higher education financing. As we can see in specification (3), the association with maternal education (degree level) goes down to 7 percentage points. When we introduce the non-pecuniary returns, the coefficient reduces further to 5.6, decreasing by 20%.

This analysis, which is graphically represented in Figure 20 indicates that the most important factors in explaining the SES gradient in the perceived likelihood of applying to university are the perceived returns to a university education in terms of both pecuniary and non-pecuniary factors. A better understanding of the system of higher education financing, seems to play a smaller role instead. Our analysis can also go further, for example we can say that among the most relevant non pecuniary factors what seems to matter most is the perceived enjoyment of coursework (vs. job tasks).

The last outcome we analyse is the perceived likelihood of getting a university degree, which is conditional on getting the necessary qualification, applying to university and getting an offer. Table 24 shows that there is an SES gradient in this outcome, of about 5 percentage points (difference between students whose mother has a degree level qualification and those whose mother has GCSEs or lower). Accounting for the employment and earnings returns to a degree however reduces this gradient substantially to 3.1 percentage point (a decrease of almost 40% in the coefficient). The other set of mediators which seems to be relevant in reducing the gradient is again represented by the non-pecuniary returns. Once we introduce these elements, the gradient becomes not significantly different from zero.

Broadly speaking, there are two take away messages emerging from this analysis. First, the mediators we have analysed here are generally strongly associated with the outcomes as well as family background, but in most cases they cannot account for all the observed socio-economic differences in educational expectations. This is evident especially for the perceived likelihood of applying to

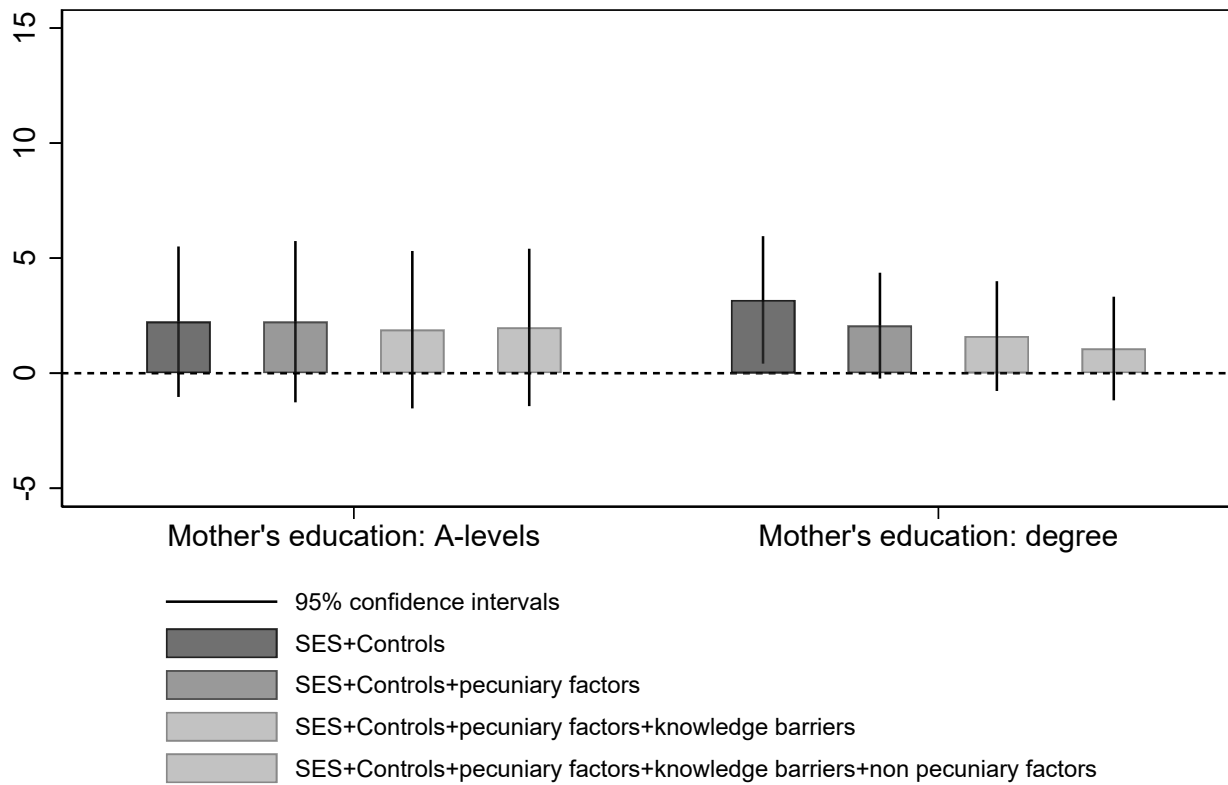
university, where even after considering a large set of individual characteristics and mediators, we are still faced with a large and significant difference in expectations according to maternal education. Second, it looks as if the mediators that count the most in reducing SES differences in higher education expectations are the students' perceptions of earnings and employment returns to a degree, and their perceptions of the enjoyment of coursework. Other aspects, such as the enjoyment of social life while at university, or the knowledge of the system of higher education financing, seem to play a smaller role.

Table 19: Likelihood of studying full-time

	(1)	(2)	(3)	(4)
Mother's education: A level	2.237 (1.534)	2.239 (1.644)	1.891 (1.605)	1.989 (1.605)
Mother's education: Degree	3.185** (1.300)	2.067* (1.079)	1.613 (1.119)	1.073 (1.057)
Male	-7.853*** (1.446)	-7.931*** (1.485)	-7.235*** (1.448)	-7.040*** (1.468)
Other Language	2.895 (3.093)	-0.022 (2.992)	0.004 (2.944)	-0.229 (2.784)
Any Sibling	-0.771 (1.385)	-0.463 (1.266)	-0.373 (1.246)	-0.597 (1.239)
Single/No Parent	-0.274 (1.430)	-0.276 (1.362)	-0.207 (1.330)	-0.025 (1.368)
Home learning environment index	3.175*** (1.071)	3.037** (1.034)	2.902** (1.024)	2.881** (1.048)
Willingness to compete	0.002 (0.029)	-0.004 (0.031)	-0.011 (0.031)	-0.012 (0.032)
Planning ahead	0.145*** (0.041)	0.131*** (0.038)	0.132*** (0.038)	0.126*** (0.039)
Growth mindset	0.950 (1.011)	1.169 (0.993)	0.846 (1.006)	0.317 (0.956)
Internal locus of control	5.210*** (1.097)	4.733*** (1.126)	4.245*** (1.025)	4.042*** (1.008)
Diff Earnings between 0 and 20k		3.158 (2.627)	3.225 (2.526)	2.552 (2.277)
Diff Earnings greater than 20k		7.532** (2.739)	7.596** (2.717)	6.621** (2.528)
Diff probability of working		0.125*** (0.030)	0.116*** (0.031)	0.091*** (0.031)
Financing of HE (%)			9.016** (3.576)	8.585** (3.367)
Financing of tuition fees (%)			5.898* (3.138)	5.451* (2.951)
Financing of maintenance costs (%)			2.251 (3.883)	1.537 (3.830)
Enjoyment of Social Life				0.038 (0.048)
Enjoyment of coursework or job tasks				0.165*** (0.047)
Managing finance				-0.024 (0.041)
Life skills and daily activities				0.015 (0.033)
Constant	44.308*** (3.964)	40.391*** (4.038)	30.483*** (3.454)	32.805*** (3.461)
Observations	1360	1360	1360	1360
R-squared	0.154	0.185	0.195	0.207
Mean dependent variable	51.973	51.973	51.973	51.973

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 16: Likelihood of studying full-time: estimated coefficients for maternal education



Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 19. The vertical lines represent the 95% confidence interval of the point estimate.

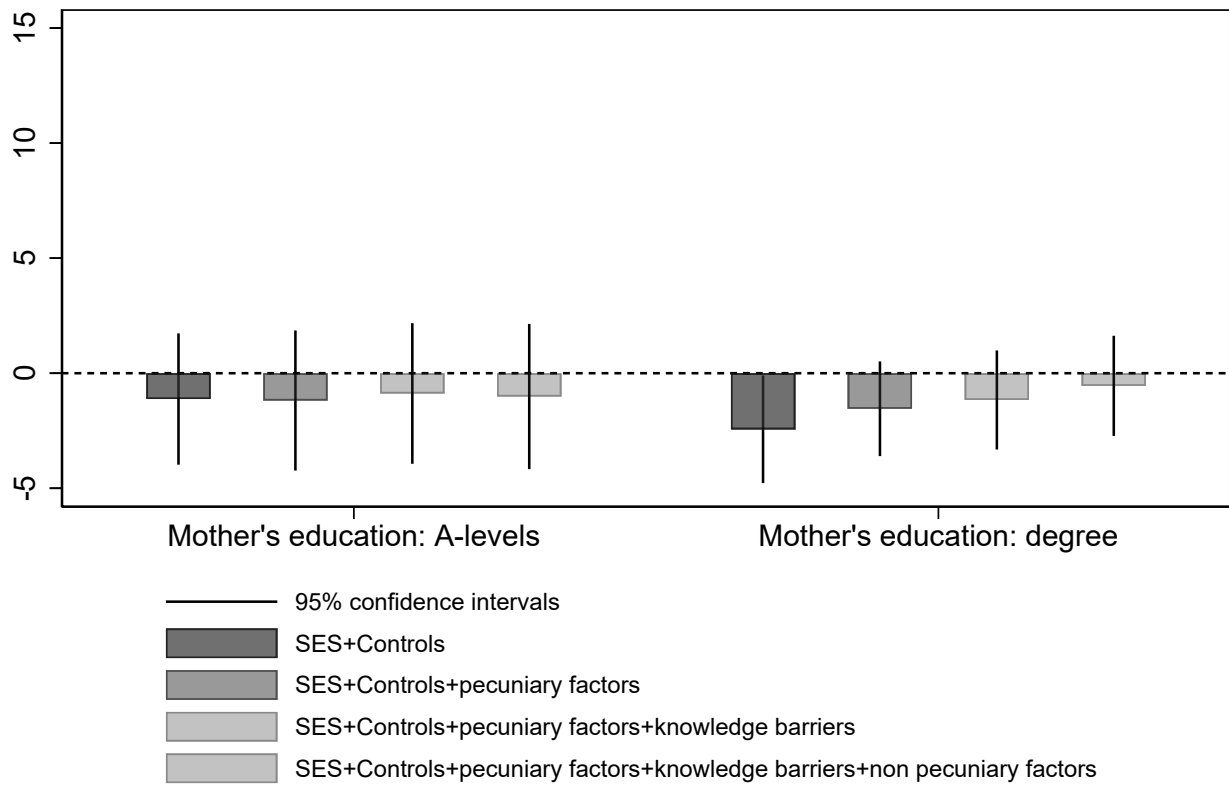


Table 20: Likelihood of doing an apprenticeship

	(1)	(2)	(3)	(4)
Mother's education: A level	-1.123 (1.338)	-1.187 (1.428)	-0.882 (1.433)	-1.015 (1.481)
Mother's education: Degree	-2.438** (1.097)	-1.546 (0.965)	-1.164 (1.010)	-0.550 (1.021)
Male	10.018*** (1.522)	10.041*** (1.455)	9.624*** (1.464)	9.624*** (1.419)
Other Language	-5.367** (2.241)	-2.941 (2.238)	-2.939 (2.243)	-2.373 (2.270)
Any Sibling	-0.527 (1.856)	-0.776 (1.779)	-0.889 (1.762)	-0.645 (1.606)
Single/No Parent	-0.053 (1.497)	-0.047 (1.452)	-0.058 (1.422)	-0.199 (1.471)
Home learning environment index	-1.761* (0.918)	-1.637* (0.872)	-1.584* (0.870)	-1.561* (0.877)
Willingness to compete	-0.002 (0.021)	0.002 (0.023)	0.006 (0.024)	0.007 (0.025)
Planning ahead	-0.082** (0.030)	-0.071** (0.028)	-0.073** (0.029)	-0.068** (0.028)
Growth mindset	-1.364 (0.795)	-1.514* (0.784)	-1.287 (0.775)	-0.887 (0.674)
Internal locus of control	-2.303** (0.787)	-1.958** (0.821)	-1.652** (0.750)	-1.489* (0.761)
Diff Earnings between 0 and 20k		-0.876 (1.877)	-0.924 (1.833)	-0.349 (1.766)
Diff Earnings greater than 20k		-4.759*** (1.581)	-4.718** (1.604)	-3.912** (1.611)
Diff probability of working		-0.104*** (0.026)	-0.098*** (0.026)	-0.078*** (0.026)
Financing of HE (%)			-4.323 (2.613)	-4.140 (2.641)
Financing of tuition fees (%)			-6.343** (2.649)	-6.517** (2.646)
Financing of maintenance costs (%)			0.966 (3.540)	1.351 (3.631)
Enjoyment of Social Life				-0.042 (0.035)
Enjoyment of coursework or job tasks				-0.113* (0.053)
Managing finance				-0.044 (0.034)
Life skills and daily activities				0.023 (0.041)
Constant	27.719*** (3.614)	29.765*** (2.824)	35.677*** (2.813)	33.973*** (2.843)
Observations	1360	1360	1360	1360
R-squared	0.122	0.150	0.156	0.171
Mean dependent variable	26.989	26.989	26.989	26.989

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 17: Likelihood of doing an apprenticeship: estimated coefficients for maternal education



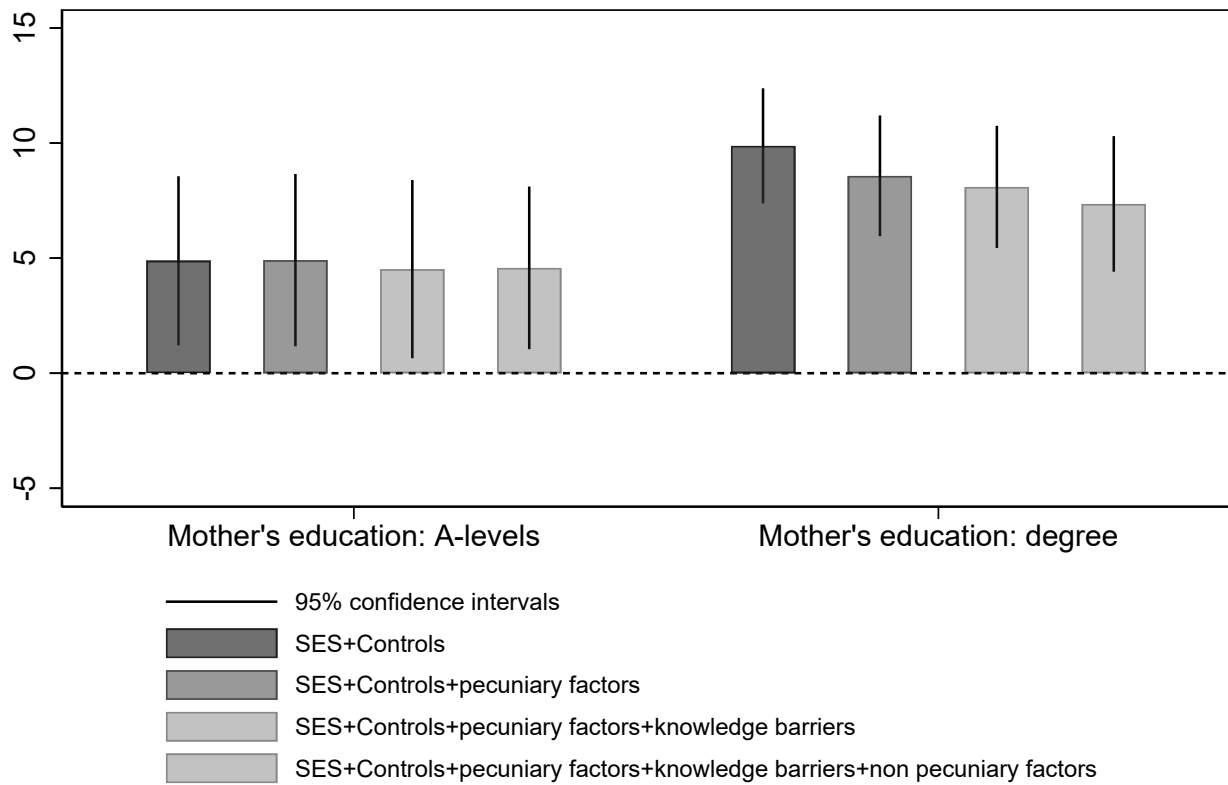
Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 20. The vertical lines represent the 95% confidence interval of the point estimate.

Table 21: Likelihood of doing A-Levels

	(1)	(2)	(3)	(4)
Mother's education: A level	4.885** (1.724)	4.914** (1.757)	4.523** (1.816)	4.578** (1.658)
Mother's education: Degree	9.881*** (1.173)	8.577*** (1.231)	8.097*** (1.245)	7.357*** (1.383)
Male	-6.985*** (1.376)	-6.998*** (1.308)	-5.834*** (1.233)	-5.713*** (1.271)
Other Language	9.977*** (2.834)	6.202** (2.847)	6.576** (2.732)	6.113** (2.823)
Any Sibling	-0.083 (1.853)	0.362 (1.700)	0.426 (1.733)	0.254 (1.703)
Single/No Parent	-2.962 (2.342)	-2.984 (2.276)	-2.838 (2.131)	-2.278 (2.234)
Home learning environment index	3.373** (1.147)	3.266** (1.146)	2.986** (1.158)	2.971** (1.199)
Willingness to compete	0.117*** (0.030)	0.111*** (0.032)	0.097*** (0.031)	0.094*** (0.031)
Planning ahead	0.138*** (0.031)	0.123*** (0.027)	0.125*** (0.028)	0.115*** (0.025)
Growth mindset	1.501** (0.526)	1.728*** (0.486)	1.262** (0.535)	0.647 (0.480)
Internal locus of control	5.205*** (0.816)	4.670*** (0.819)	3.883*** (0.806)	3.678*** (0.859)
Diff Earnings between 0 and 20k		3.215 (2.115)	3.404 (2.090)	2.519 (2.242)
Diff Earnings greater than 20k		7.669*** (1.811)	7.821*** (1.799)	6.653*** (1.850)
Diff probability of working		0.159*** (0.027)	0.145*** (0.028)	0.112*** (0.027)
Financing of HE (%)			12.942*** (3.387)	12.099*** (3.254)
Financing of tuition fees (%)			7.781** (3.398)	7.426** (3.339)
Financing of maintenance costs (%)			6.681* (3.741)	5.818 (3.419)
Enjoyment of Social Life				-0.007 (0.050)
Enjoyment of coursework or job tasks				0.217*** (0.063)
Managing finance				-0.015 (0.033)
Life skills and daily activities				0.083 (0.053)
Constant	41.494*** (3.233)	37.466*** (3.691)	21.599*** (4.015)	24.587*** (3.656)
Observations	1296	1296	1296	1296
R-squared	0.213	0.253	0.275	0.298
Mean dependent variable	63.853	63.853	63.853	63.853

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 18: Likelihood of doing A-Levels: estimated coefficients for maternal education



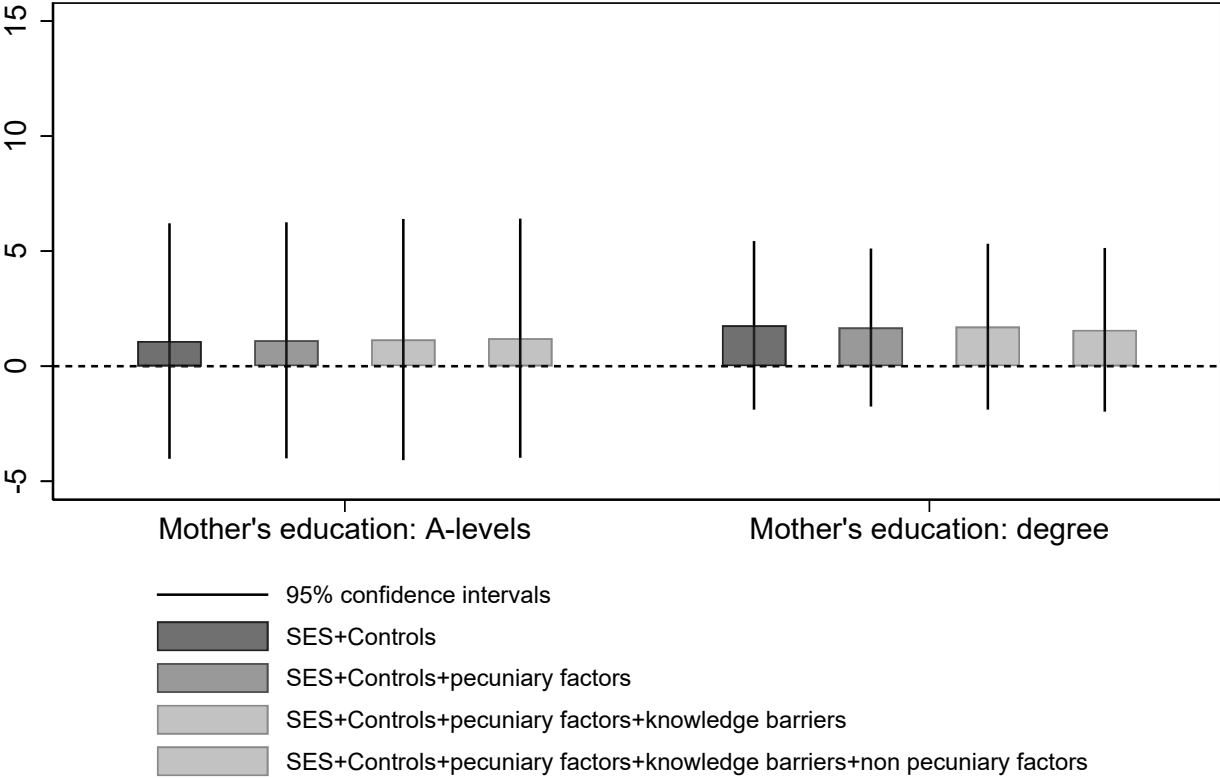
Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 21. The vertical lines represent the 95% confidence interval of the point estimate.

Table 22: Likelihood of doing BTECs

	(1)	(2)	(3)	(4)
Mother's education: A level	1.094 (2.401)	1.125 (2.407)	1.159 (2.459)	1.217 (2.438)
Mother's education: Degree	1.775 (1.719)	1.681 (1.611)	1.718 (1.691)	1.582 (1.668)
Male	0.990 (1.356)	1.203 (1.408)	1.029 (1.498)	0.936 (1.431)
Other Language	-1.193 (3.762)	-1.418 (3.778)	-1.482 (3.785)	-1.841 (3.843)
Any Sibling	0.167 (2.062)	0.186 (2.078)	0.194 (2.050)	0.096 (2.074)
Single/No Parent	-0.031 (1.703)	-0.074 (1.712)	-0.115 (1.676)	0.018 (1.668)
Home learning environment index	1.081 (0.880)	1.102 (0.895)	1.152 (0.914)	1.148 (0.919)
Willingness to compete	0.006 (0.031)	0.007 (0.031)	0.009 (0.030)	0.010 (0.030)
Planning ahead	0.116** (0.046)	0.117** (0.048)	0.117** (0.047)	0.117** (0.047)
Growth mindset	0.331 (0.869)	0.319 (0.895)	0.374 (0.910)	0.406 (0.841)
Internal locus of control	-2.039** (0.921)	-2.063** (0.919)	-1.953* (0.930)	-1.963** (0.914)
Diff Earnings between 0 and 20k		-0.057 (1.730)	-0.075 (1.724)	0.009 (1.748)
Diff Earnings greater than 20k		-1.142 (1.915)	-1.183 (1.881)	-1.108 (1.924)
Diff probability of working		0.022 (0.031)	0.023 (0.031)	0.022 (0.030)
Financing of HE (%)			-2.002 (4.705)	-1.701 (4.635)
Financing of tuition fees (%)			-0.365 (2.248)	0.207 (2.287)
Financing of maintenance costs (%)			-1.749 (3.483)	-1.438 (3.567)
Enjoyment of Social Life				-0.019 (0.037)
Enjoyment of coursework or job tasks				-0.033 (0.043)
Managing finance				0.061 (0.038)
Life skills and daily activities				0.024 (0.071)
Constant	31.743*** (3.527)	31.948*** (3.666)	34.264*** (5.931)	33.800*** (5.748)
Observations	1288	1288	1288	1288
R-squared	0.054	0.055	0.056	0.059
Mean dependent variable	42.370	42.370	42.370	42.370

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 19: Likelihood of doing BTECs: estimated coefficients for maternal education



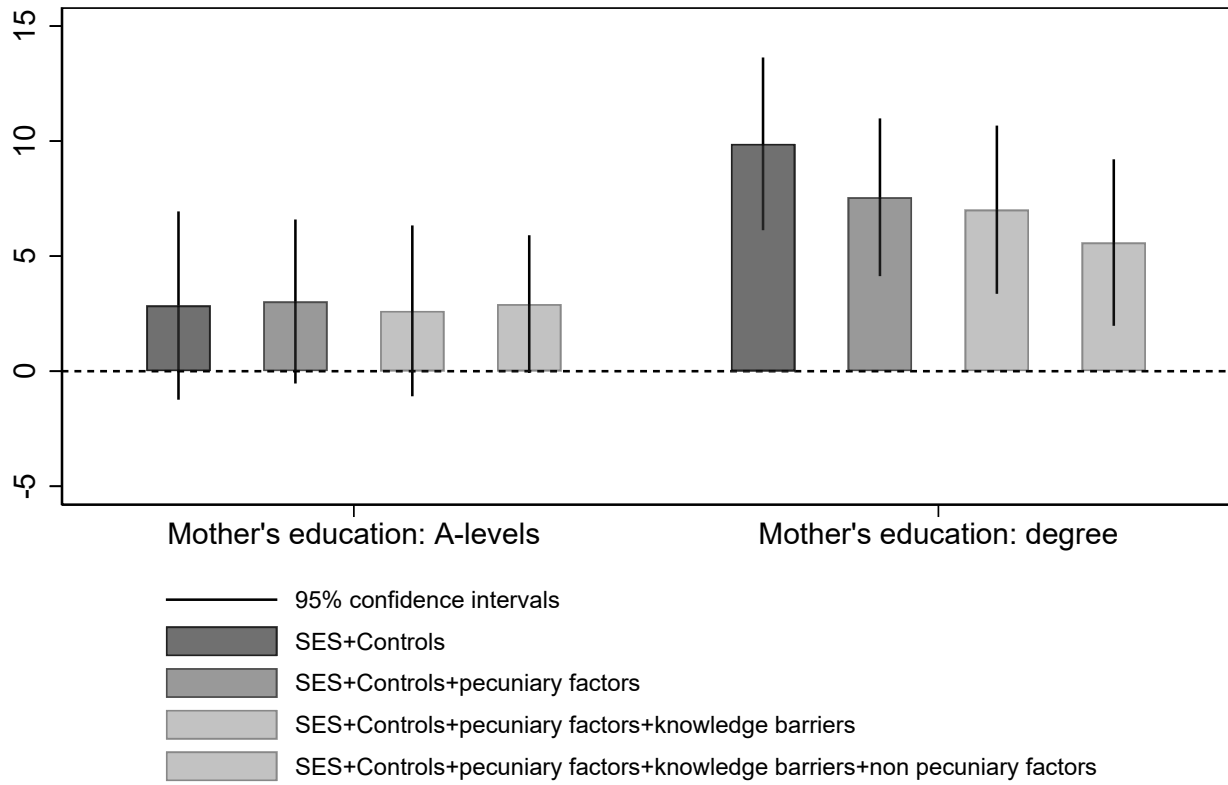
Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 22. The vertical lines represent the 95% confidence interval of the point estimate.

Table 23: Likelihood of applying to university

	(1)	(2)	(3)	(4)
Mother's education: A level	2.853 (1.920)	3.029* (1.672)	2.623 (1.742)	2.916* (1.404)
Mother's education: Degree	9.881*** (1.761)	7.560*** (1.608)	7.018*** (1.715)	5.591*** (1.697)
Male	-4.960*** (1.285)	-4.582*** (1.334)	-3.839*** (1.302)	-3.548** (1.304)
Other Language	12.963*** (2.074)	6.963*** (2.267)	6.979*** (2.207)	5.904** (2.335)
Any Sibling	-0.460 (2.069)	0.176 (1.893)	0.369 (1.869)	-0.272 (1.470)
Single/No Parent	0.357 (1.242)	0.232 (1.120)	0.376 (1.167)	1.058 (1.070)
Home learning environment index	1.780* (0.864)	1.548* (0.784)	1.452* (0.753)	1.380 (0.804)
Willingness to compete	0.155*** (0.025)	0.148*** (0.023)	0.141*** (0.024)	0.141*** (0.022)
Planning ahead	0.168*** (0.032)	0.145*** (0.027)	0.148*** (0.028)	0.134*** (0.026)
Growth mindset	2.808** (1.020)	3.156*** (1.001)	2.819** (1.021)	1.599 (0.937)
Internal locus of control	5.348*** (0.921)	4.437*** (0.851)	3.907*** (0.829)	3.394*** (0.696)
Diff Earnings between 0 and 20k		3.297 (2.576)	3.369 (2.565)	1.857 (2.292)
Diff Earnings greater than 20k		9.438*** (2.363)	9.400*** (2.371)	7.132*** (2.061)
Diff probability of working		0.289*** (0.027)	0.280*** (0.027)	0.221*** (0.030)
Financing of HE (%)			4.723 (3.121)	4.204 (2.696)
Financing of tuition fees (%)			9.371** (3.536)	9.174** (3.239)
Financing of maintenance costs (%)			1.943 (2.693)	0.748 (2.778)
Enjoyment of Social Life				0.037 (0.027)
Enjoyment of coursework or job tasks				0.353*** (0.034)
Managing finance				0.040 (0.029)
Life skills and daily activities				0.081* (0.044)
Constant	37.730*** (3.074)	32.401*** (3.218)	22.274*** (3.770)	26.956*** (3.148)
Observations	1360	1360	1360	1360
R-squared	0.218	0.319	0.329	0.393
Mean dependent variable	63.168	63.168	63.168	63.168

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 20: Likelihood of applying to university



Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 23. The vertical lines represent the 95% confidence interval of the point estimate.

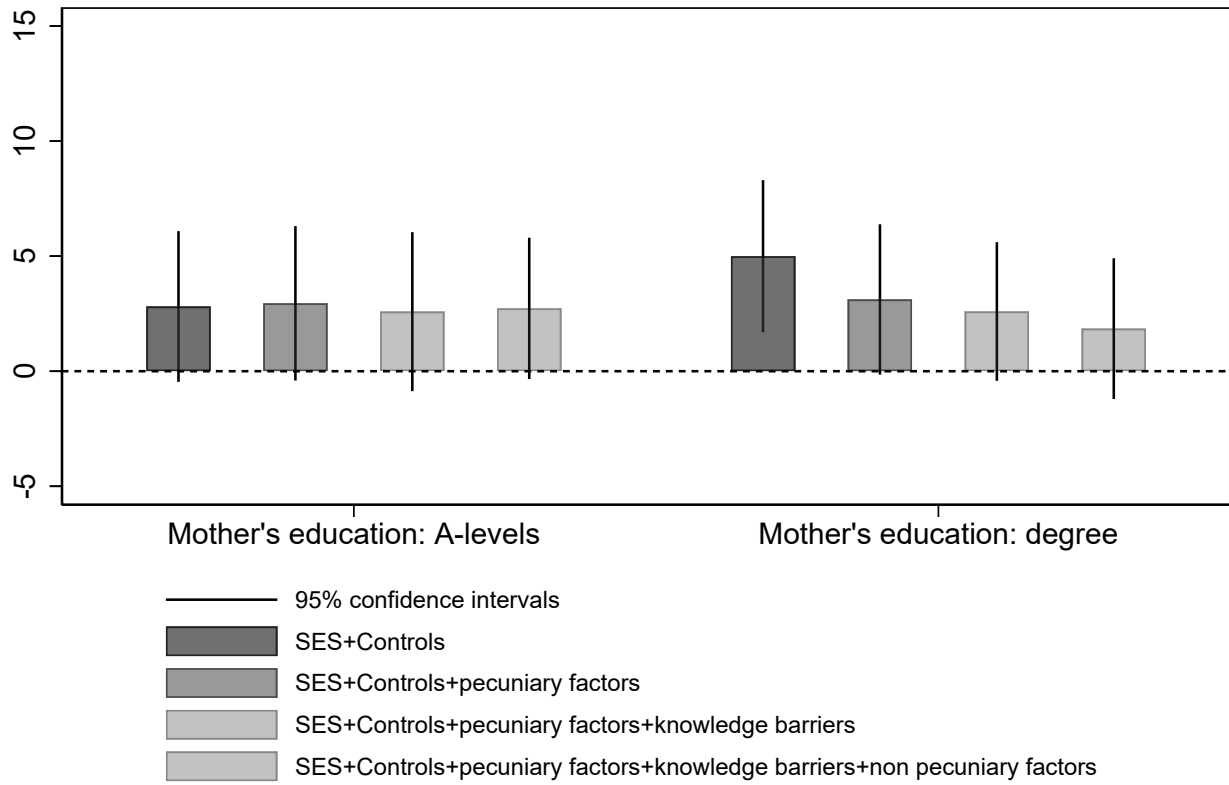


Table 24: Likelihood of finishing university

	(1)	(2)	(3)	(4)
Mother's education: A level	2.812* (1.537)	2.951* (1.574)	2.589 (1.620)	2.730* (1.441)
Mother's education: Degree	4.998*** (1.550)	3.118* (1.533)	2.596* (1.413)	1.849 (1.434)
Male	-4.206*** (1.128)	-3.763*** (1.101)	-2.917** (1.121)	-2.767** (1.121)
Other Language	7.831*** (1.518)	3.360** (1.363)	3.391** (1.477)	3.009* (1.657)
Any Sibling	0.103 (1.249)	0.548 (1.201)	0.784 (1.199)	0.516 (1.022)
Single/No Parent	-0.994 (1.011)	-1.160 (0.922)	-0.877 (0.932)	-0.734 (0.843)
Home learning environment index	3.004*** (0.989)	2.885*** (0.969)	2.790*** (0.918)	2.779** (0.959)
Willingness to compete	0.110*** (0.022)	0.107*** (0.022)	0.099*** (0.022)	0.098*** (0.021)
Planning ahead	0.163*** (0.024)	0.148*** (0.022)	0.153*** (0.021)	0.145*** (0.020)
Growth mindset	2.855*** (0.666)	3.106*** (0.609)	2.772*** (0.644)	2.122*** (0.584)
Internal locus of control	6.306*** (0.734)	5.561*** (0.745)	4.968*** (0.685)	4.743*** (0.781)
Diff Earnings between 0 and 20k		3.761 (2.929)	3.839 (2.778)	2.946 (2.556)
Diff Earnings greater than 20k		6.501** (2.824)	6.462** (2.717)	5.210* (2.460)
Diff probability of working		0.240*** (0.028)	0.231*** (0.027)	0.201*** (0.027)
Financing of HE (%)			1.773 (2.893)	1.135 (2.721)
Financing of tuition fees (%)			9.981*** (2.976)	9.497*** (2.869)
Financing of maintenance costs (%)			4.980** (2.069)	3.989* (1.960)
Enjoyment of Social Life				0.066 (0.040)
Enjoyment of coursework or job tasks				0.216*** (0.045)
Managing finance				-0.011 (0.019)
Life skills and daily activities				-0.041 (0.055)
Constant	51.675*** (2.335)	46.713*** (3.388)	35.588*** (2.953)	38.699*** (2.831)
Observations	1359	1359	1359	1359
R-squared	0.232	0.308	0.324	0.347
Mean dependent variable	74.434	74.434	74.434	74.434

Note: Excluded categories: Mother's education: GCSE or below, female, English is main language, no siblings, no own desk, no own room, no quiet place to study, no computer/tablet, no internet access. All models include school fixed effects. Symbols: \* indicates the effect is statistically significant at 10%; \*\* indicates the effect is statistically significant at 5%; \*\*\* indicates the effect is statistically significant at 1%.

Figure 21: Likelihood of finishing university



Note: Each bar reflects the size of the coefficient estimated in specifications (1) to (4) of Table 24. The vertical lines represent the 95% confidence interval of the point estimate.

## A Bivariate analysis by mother's education

Figure A.1: Subjective probabilities of staying in FT education or enrolling in a FT apprenticeship (by maternal education)

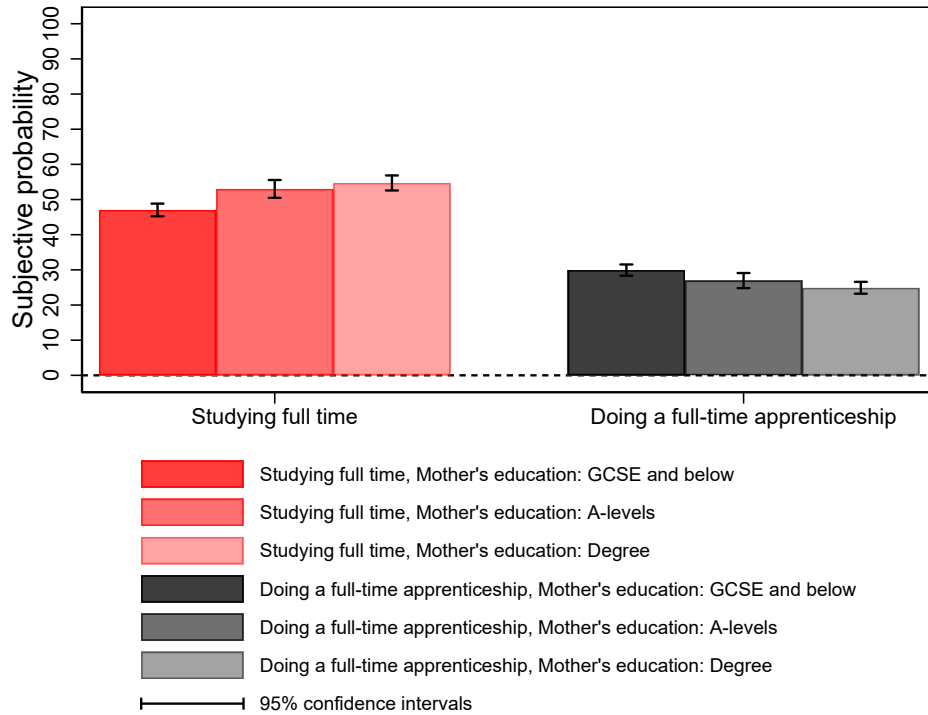


Figure A.2: Subjective probabilities of doing A-levels and BTECs if respondent stays in education (by maternal education)

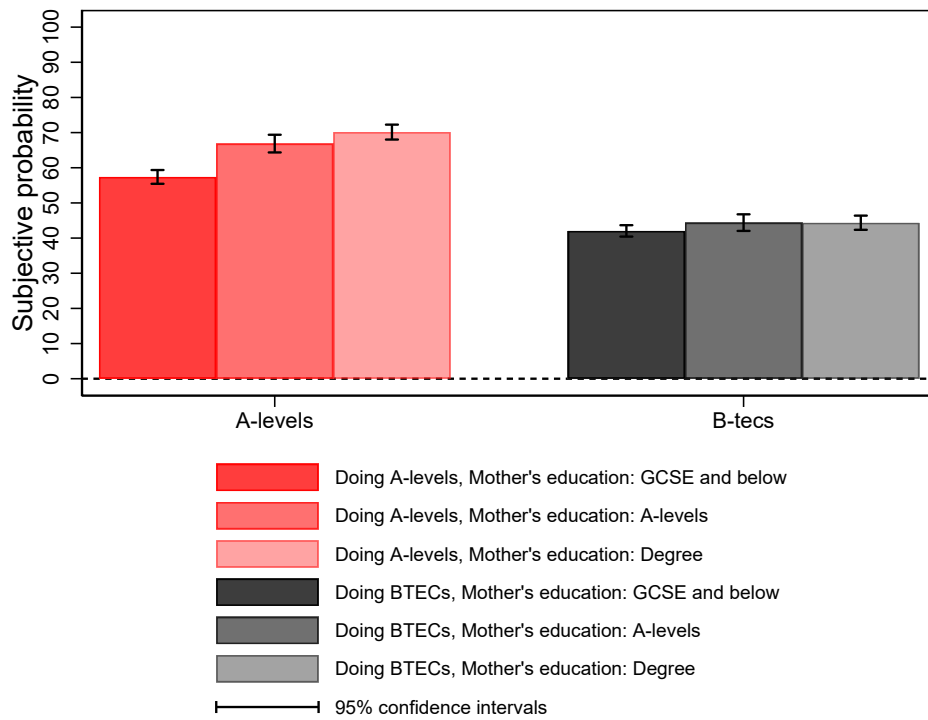


Figure A.3: Subjective probabilities of applying to university and finishing it (by maternal education)

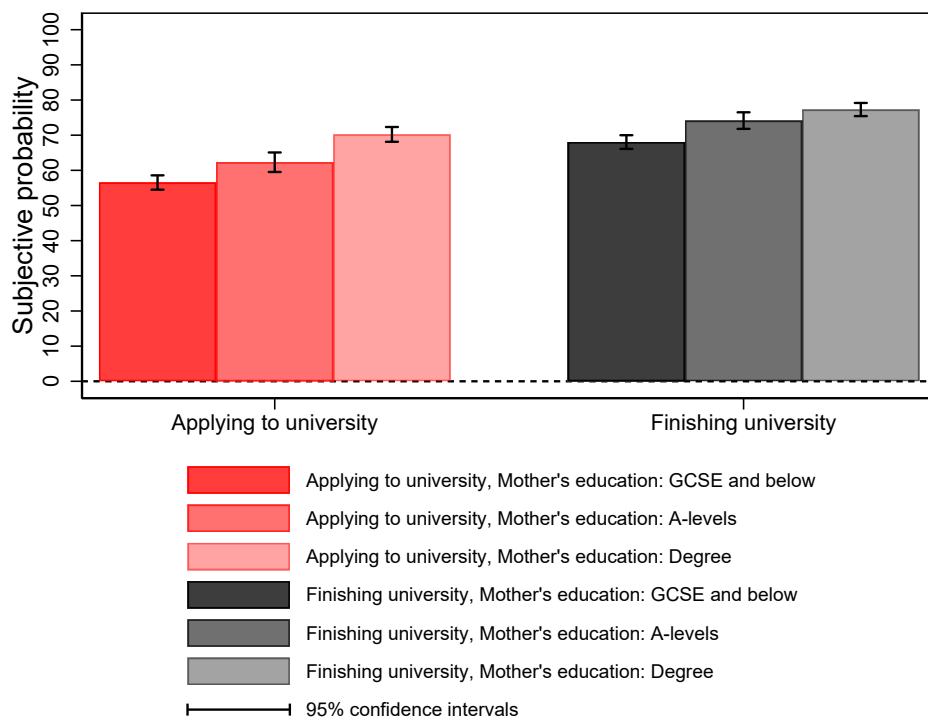


Figure A.4: Difference in the expected earnings with a Degree and expected earnings without a degree (by maternal education)

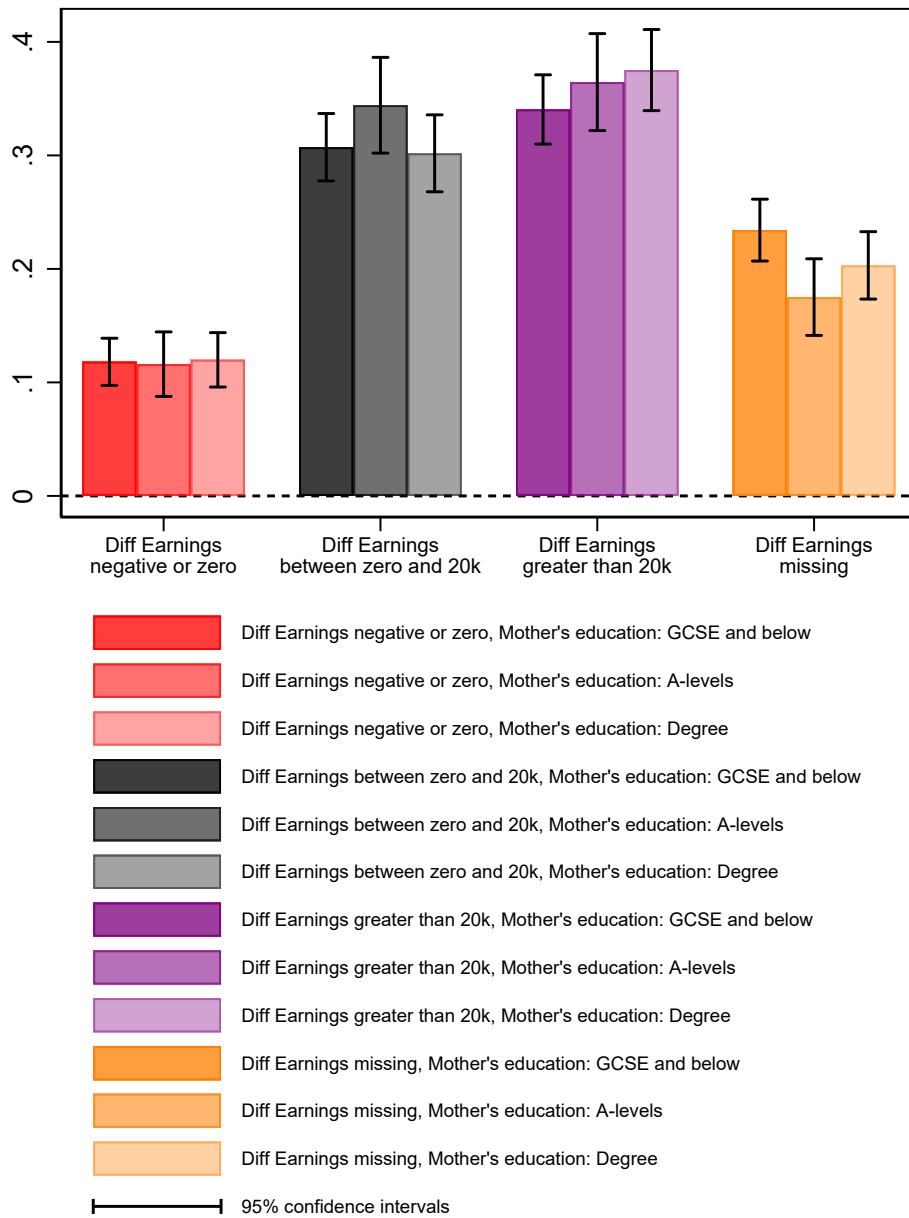


Figure A.5: Difference in the subjective probability of working with a degree and the subjective probability of working without a degree (by maternal education)

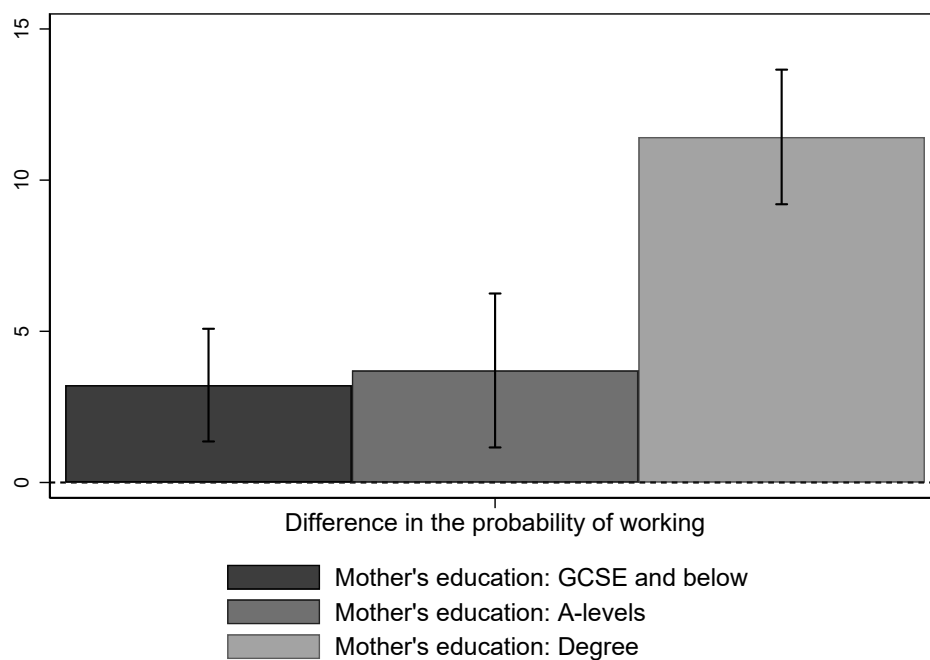


Figure A.6: Knowledge barriers (by mother's education)

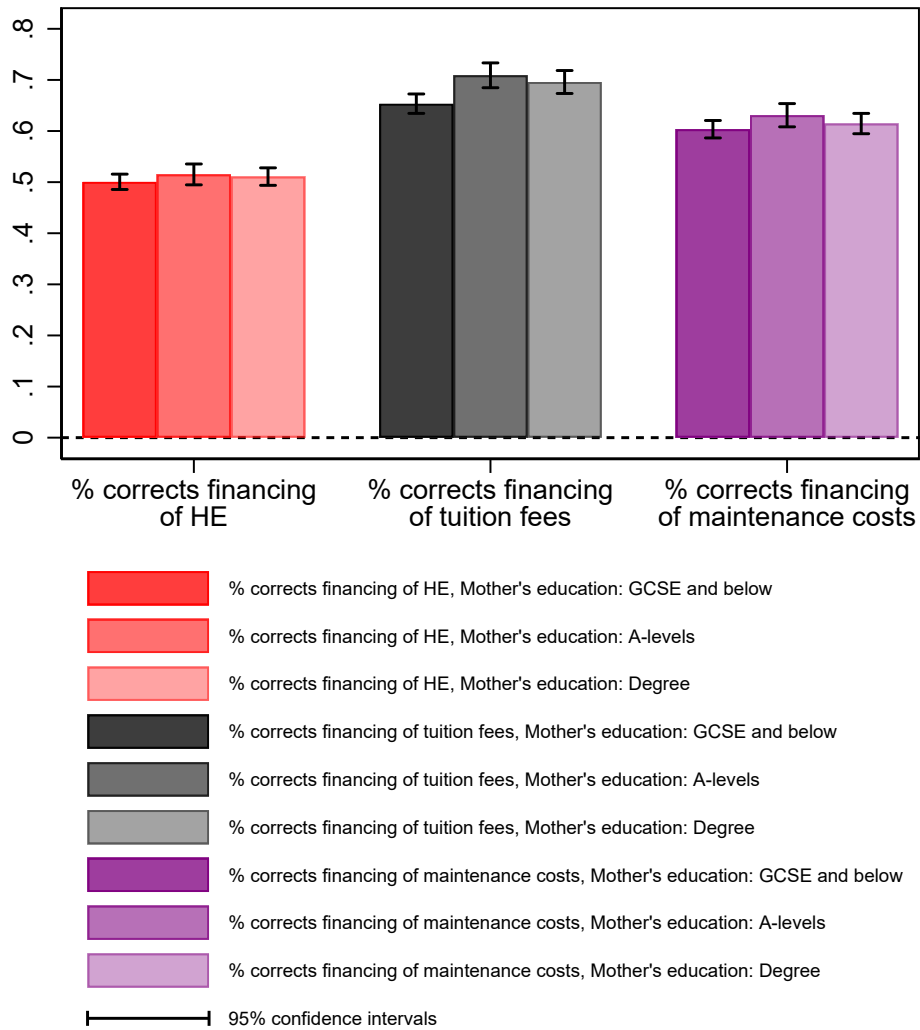
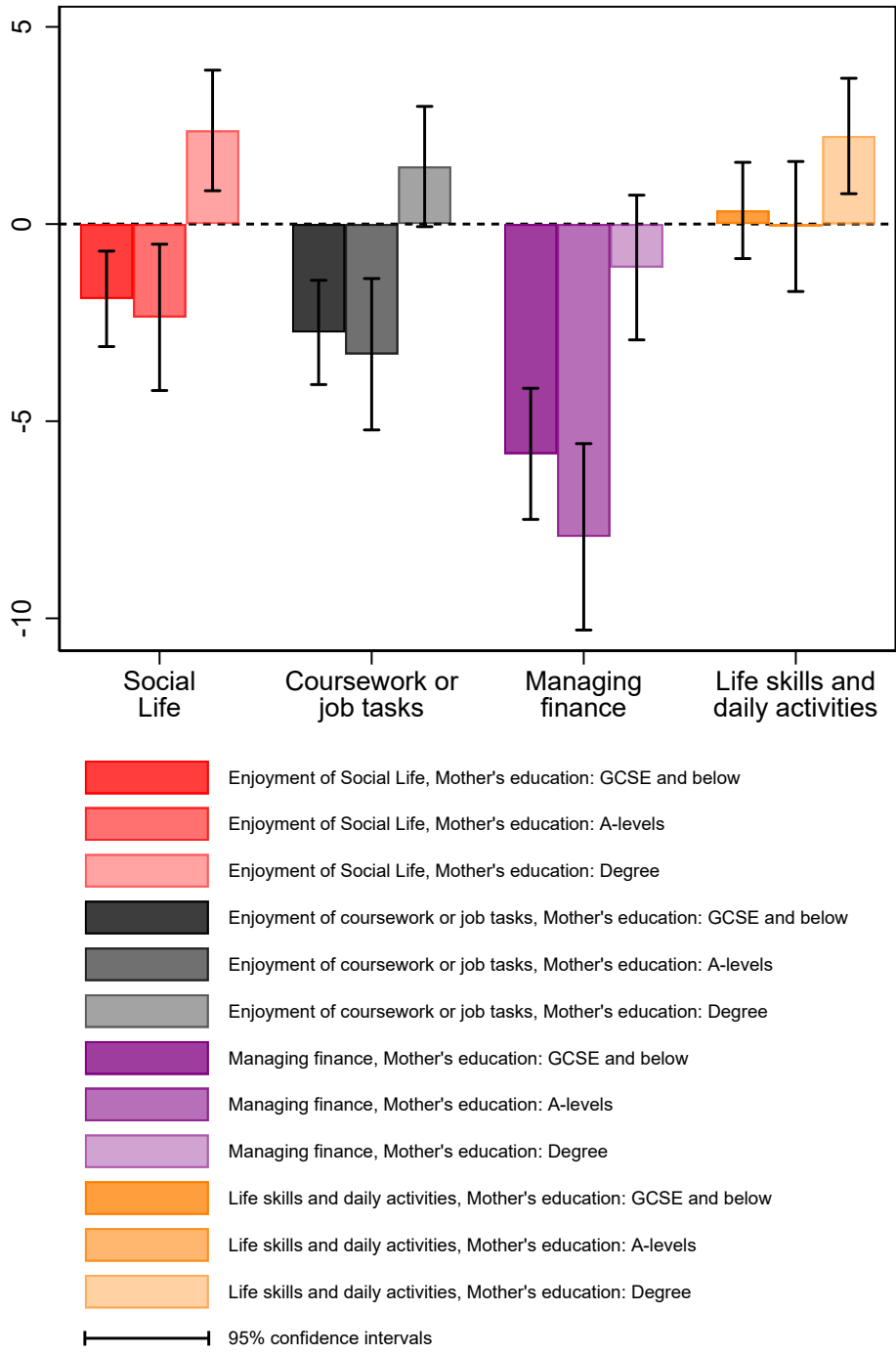


Figure A.7: Non pecuniary factors (by mother's education)





## B Variable construction

Table B.1: Variable construction: controls

Controls		
Variable	Question wording	Variable construction
Home learning environment index	<p>‘Which of the following are in your home?’:</p> <ul style="list-style-type: none"> <li>i) Your own desk;</li> <li>ii) A room of your own;</li> <li>iii) A quiet place to study;</li> <li>iv) computer/tablet you can use for school work;</li> <li>v) Access to the internet;</li> <li>vi) Books to help with your school work.</li> </ul> <p><i>Possible answers: Yes, No</i></p>	<p>The number of items mentioned has been divided by the number of non missing answers;</p> <p>the resulting variable has been standardized such that it has mean 0 and standard deviation 1.</p>
Willingness to compete	<p>‘How willing are you to compete?’, with answers on a scale from 0 to 100 with 0 being ‘not at all willing’ and 100 being ‘very willing’</p>	<p>Score ranging from 0 to 100</p>
Planning attitude	<p>‘How much do you plan ahead for the future?’, with answers on a scale from 0 to 100 with 0 being ‘not at all planning ahead’ and 100 being ‘planning ahead all the time’</p>	<p>Score ranging from 0 to 100</p>
Growth mindset	<p>‘Read each sentence below and then provide your answer indicating how much you agree or disagree with each statement. There are no right or wrong answers.’</p> <ul style="list-style-type: none"> <li>i) You have a certain amount of intelligence, and you can’t really do much to change it;</li> <li>ii) Your intelligence is something about you that you can’t change very much</li> <li>iii) You can learn new things, but you can’t really change your basic intelligence.</li> </ul> <p><i>Possible answers: strongly disagree, disagree, mostly disagree, mostly agree, agree, strongly agree.</i></p>	<p>Each of the answers to sub-questions i), ii) and iii) was given a score from 1 (Strongly agree) to 6 (Strongly disagree).</p> <p>This score was then averaged across sub-questions.</p> <p>The resulting variable was standardized such that it has mean 0 and standard deviation 1.</p>
Internal locus of control	<p>‘Read each sentence below and then provide your answer indicating how much you identify yourself with each statement. There are no right or wrong answers.’</p> <ul style="list-style-type: none"> <li>i) If someone is not a success in life, it is usually their own fault;</li> <li>ii) Even if I do well at school, I’ll have a hard time getting the right kind of job;</li> <li>iii) Working hard at school now will help me get on later on in life;</li> <li>iv) People like me don’t have much of a chance in life;</li> <li>v) I can pretty much decide what will happen in my life;</li> <li>vi) Doing well at school means a lot to me;</li> <li>vii) How well you get on in this world is mostly a matter of luck;</li> <li>viii) If you work hard at something you’ll usually succeed.</li> </ul> <p><i>Possible answers: Not like me at all, Not much like me, Somewhat like me, Mostly like me, Very much like me.</i></p>	<p>Each of the answers to sub-questions i), iii) and v), vi) viii) was given a score from 1 (Not like me at all) to 5 (very much like me).</p> <p>Each of the answers to sub-questions ii), iv) and vii) (negatively framed) was given a score from 1 (very much like me) to 5 (Not like me at all).</p> <p>This score was then averaged across sub-questions. The resulting variable was standardized such that it has mean 0 and standard deviation 1.</p>

Table B.2: Variable construction: knowledge barriers

Mediators: knowledge barriers		
Variable	Question wording	Variable construction
Financing of HE (%)	<p>Here are a number of true/false questions for you to try. Don't worry if you get it wrong, this is not a formal test.</p> <ul style="list-style-type: none"> <li>i) You have to have the money to pay your yearly student fees upfront before you start your course;</li> <li>ii) You can borrow more for your living costs (maintenance) if your parents have a low income;</li> <li>iii) You might be charged interest (extra money) on fees and loans while you study;</li> <li>iv) After you graduate you only pay back your loans if you have a job;</li> <li>v) After you graduate you have to pay back your loans within 20 years;</li> <li>vi) The monthly repayment after graduation is the same for everyone;</li> <li>vii) You only pay back anything on your loan if you earn above £25,000 per year;</li> <li>viii) If you haven't repaid your loan after 30 years it is scrapped/written off</li> </ul> <p><i>Possible answers: true, false.</i></p>	The variable is the share of correct answers across the eight items
Financing of tuition fees (%)	<p>Who pays for the university fees? Tick all that apply.</p> <ul style="list-style-type: none"> <li>i) Support from parents/relatives/guardian;</li> <li>ii) Earnings from a job;</li> <li>iii) A student loan, you pay it back;</li> <li>iv) Bursaries or scholarships;</li> <li>v) Your secondary school.</li> </ul>	The variable is the share of correct answers across the five items
Financing of maintenance costs (%)	<p>Who pays for your living costs (or maintenance) while at university? Tick all that apply.</p> <ul style="list-style-type: none"> <li>i) Support from parents/relatives/guardian</li> <li>ii) Earnings from a job</li> <li>iii) A student loan, you pay it back</li> <li>iv) Bursaries or scholarships</li> <li>v) Your secondary school</li> </ul>	The variable is the share of correct answers across the five items

To elicit the expected non-pecuniary benefits of university, we asked the respondents to think of themselves in two hypothetical scenarios at age 18/21: if they go to university (scenario A) and if they go to work instead (scenario B). For each scenario, the respondents are asked to report the likelihood of several outcomes, spanning four areas: Enjoyment of social life, enjoyment of coursework or job tasks, managing finance, life skills and daily activities. The question wording of these questions is the following: A. Please think about yourself when you are around 18 and assume you go to university. While at university, how likely do you think it is that you will ... and B. Please think about yourself when you are around 18 years old and imagine your life in the following 3-4 years if you do not go to university but start working instead. How likely do you think it is that you will .... The outcomes analysed and how they have been aggregated into the variables used in the analysis is explained in details in table B.3.

Table B.3: Variable construction: non pecuniary benefits

Mediators: non pecuniary benefits of university		
Variable	Question wording	Variable construction
Enjoyment of social life	i) enjoy the social life and activities you engage in? ii) lose contact with your family and current friends? iii) feel lonely and not part of a group? <i>Possible answers: Score from 0 to 100</i>	The scores from sub-questions $A_{ii}$ , $A_{iii}$ , $B_{ii}$ , $B_{iii}$ (with negative framing) have been multiplied by -1. The variable ‘Enjoyment of social life’ is the average of the sub-question specific differences between the scores in scenario A and in scenario B. In formula $\frac{(A_i - B_i) + (-1)(A_{ii} - B_{ii}) + (-1)(A_{iii} - B_{iii})}{3}$
Enjoyment of coursework or job tasks	iv) find the material that is covered/work tasks interesting? v) find the coursework/work task too hard? <i>Possible answers: Score from 0 to 100</i>	The scores from sub-questions $A_v$ and $B_v$ (with negative framing) have been multiplied by -1. The variable ‘Enjoyment of coursework or job tasks’ is the average of the sub-question specific differences between the scores in scenario A and in scenario B. In formula $\frac{(A_{iv} - B_{iv}) + (-1)(A_v - B_v) + (A_{vi} - B_{vi})}{3}$
Managing finance	vii) get by financially? viii) get into debt that you will find hard to repay in the future? <i>Possible answers: Score from 0 to 100</i>	The scores from sub-questions $A_{viii}$ and $B_{viii}$ (with negative framing) have been multiplied by -1. The variable ‘Managing finance’ is the average of the sub-question specific differences between the scores in scenario A and in scenario B. In formula $\frac{(A_{vii} - B_{vii}) + (-1)(A_{viii} - B_{viii})}{2}$
Life skills and daily activities	ix) learn new life skills and how to look after yourself? x) struggle with activities of daily living (food, laundry etc.)? xi) do physical activity/keep active? <i>Possible answers: Score from 0 to 100</i>	The scores from sub-questions $A_x$ and $B_x$ (with negative framing) have been multiplied by -1. The variable ‘Life skills and daily activities’ is the average of the sub-question specific differences between the scores in scenario A and in scenario B. In formula $\frac{(A_{ix} - B_{ix}) + (-1)(A_v - B_v) + (A_x - B_x)}{3}$