Assessing the changing influence of Cultural and Social Capital with respect to UK Higher Education participation across different cohorts

A thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy

School of Economics
University of East Anglia
United Kingdom

Jack Whybrow
September 2018

Word count: 102,839

ABSTRACT

In this thesis we provide evidence that cultural and social factors are significantly associated with Higher Education (HE) participation in the UK. This is important because the current UK HE literature focuses almost exclusively on individual and family background characteristics. We argue that a more complete understanding of cultural and social influences has the potential to make significant contributions to our understanding of HE participation and that research in this area may highlight an underutilised policy avenue for achieving Widening Participation (WP) objectives. This thesis begins with a literature review in which we model an individual's HE participation decision (using a Human Capital approach) and present some recent evidence relating to the association with individual and family background characteristics. We then introduce the concepts of Cultural and Social Capital and argue how these might affect HE participation. In our first empirical investigation we present evidence which reveals that particular elements of Cultural and Social Capital are significantly associated with an individual's likelihood of HE participation, using two well-researched British birth cohorts (1958 and 1970). Our second piece of empirical work builds on these findings in two ways: first, by investigate whether measures of Cultural and Social Capital retain significant associations with HE participation, using a more recent cohort of individuals (born between 1989 and 1990); second, by investigating whether additional measures of Habitus (embodied Cultural Capital) and contextual sources of Social Capital also appear important. The results of this study reaffirm our earlier findings, whilst additional significant associations are apparent. Our third empirical investigation, which also uses this more recent cohort, aims to identify whether school attended (and their characteristics) exhibits an independent association with HE participation. Here we find that this appears to be the case, whilst our prior findings remaining largely unchanged.

SECURE DATA USAGE CONDITIONS

To conduct the analysis in the second and third empirical chapters, we use a sample of young persons from the Longitudinal Study of Young People in England 2004 (LSYPE). However, the licenced version of the data did not contain sufficient detail for us to adequately control for individual and family background characteristics. In addition to the separate influence of school attended, in the case of our third empirical chapter. The secure access version provided more information whilst several additional variables were also sourced from the Longitudinal Surveys Team, Department for Education (DfE). We argue that the richness of the data we use represents a real strength of this project in terms of its potential to significantly contribute to understanding the determinants of UK HE participation. However, use of this data inevitably resulted in a number of constraints on the research process. In the following section we elaborate on the acquisition procedure, criteria and obligations a researcher must follow when using the data. We then describe the impact of these constraints, the restrictions they had on the research process and the implications for further research.

Access to the secure access version of the LSYPE data is provided via the Secure Lab[1]. Users can access this from their HE institution using a dedicated computer terminal. The Secure Lab is a subsidiary of the UK Data Service which is funded by the UK Economic and Social Research Council.

- Before applying to use secure access data, users must be registered with the UK Data Service and be based at a UK academic institution or a UK Economic & Social Research Council (ESRC) funded research centre. PhD students can request access, as we did, but need to apply jointly with their supervisors.
- When applying to use secure data, researchers must present evidence of their previous research projects, past publications, intended use of the data and research purpose. As such, the data can only be used for this purpose. If researchers wish to adjust their research programme, they must first apply and be approved for a change of use. Moreover, users are also required to complete a declaration (acknowledging

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[1] The following web link contains more information https://www.ukdataservice.ac.uk/get-data/how-to-access/accesssecurelab. Additional materials, which to our knowledge are not available on the website, can also be provided upon request from the author jackwhybrow@hotmail.com. These include the Secure Lab user guide, guidelines for output checking and training materials (safe researcher certification course, using the service, keeping data safe, legal aspects, understanding disclosure control and avoiding disclosure).

their confidentiality obligations) and supply a user agreement co-signed by the researcher and their institution. Successful applicants will then be required to undertake Secure Lab training[2] to attain safe researcher status, thereby becoming an ESRC accredited researcher.

- Upon successful application, the UK Data Service will then only provide access to the Secure Lab if the following working requirements are met:

  - ➢ The computer used must be a dedicated desktop computer which is based at, owned and managed by the institution (portable computers such as laptops, etc. are strictly prohibited).
  - ➢ The computer must have a direct connection to the internet (proxy servers may not be used) and a dedicated public static Internet Protocol (IP) address.
  - ➢ It must have no other network connections present, except for the one being used to access the Secure Lab. This includes Virtual Private Networks (VPNs).
  - ➢ Users must only access the data from their designated office, which should be either sole occupancy or if shared contain only ESRC accredited researchers, and not from any other location, on or off campus.
  - ➢ The office must be securable and should reside within a building owned and managed by the institution.
  - ➢ Only wired Ethernet should be used when the Secure Lab is accessed. Wireless access should not be connected simultaneously.
  - ➢ The user must also observe good security measures. For example, locking the screen when leaving unattended for short periods, logging out entirely if leaving for longer periods, securing the office when out and not allowing the display to be visible to others.

- Within the Secure Lab itself, several additional system safeguards are also in operation. For instance, users are physically prevented from accessing the internet, printing material from the service and copying and pasting material between the Secure Lab and their desktop or other media. Additional materials (partially complete drafts, data, etc.) can, however, be imported into the service (request via UK Data Service Helpdesk), although copyrighted material or data that the researcher does not own must be accompanied by the relevant permissions. To get output released from the Secure Lab, it must be of some public value and satisfy

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[2] Secure Lab training takes the best part of a day and takes place several times a year. Mine was held in central London.

> disclosure controls. These controls are periodically reviewed. Currently the output is subjected to two independent reviewers, whose primary aim is to check that a sufficient level of aggregation has been achieved to make identification practically impossible. Although, the onus is on the researcher to explain the output and convince the UK Data Service Support Team that it is non-disclosive. Furthermore, these independent reviewers ensure that all information presented is computed from at least 10 independent observations. Moreover, as a fixed policy, Excel files, chart objects, data extracts and incomplete work are not eligible for release. The Secure Access Team does, however, aim to return the outcome of output checks to the researcher within 3 working days. If issues are identified, the output will not be released with researchers then expected to provide further clarification and/or revise and re-submit.

Having described the acquisition procedure, criteria and research obligations; we now elaborate on the impact this had on the research process. For instance, although my supervisors and I were jointly registered on the project, only I had access to the data via the Secure Lab as they had not undertaken the training. This affected the supervision process because output disclosures are restricted by the Secure Data Service and will only be considered if the researcher plans to present their findings at an event, it constitutes a PhD chapter or an article that will be submitted for publication. Incomplete or intermediate analyses are not eligible for release. This, coupled with the prohibition of copying down and printing material from inside the service, meant that preparing for supervision meetings was laborious and relied on myself, as the junior researcher, anticipating my supervisors' questions and remembering important aspects of the work. We all found this challenging. This meant that methodological issues would typically take several meetings to resolve, thereby hindering progress. Moreover, when it came to requesting output for near-complete drafts, this also proved more troublesome than anticipated, despite meeting the disclosure requirements to the best of our ability. In our experience, the UK Data Service Support Team takes 3 working days to review a request, with the initial outcome almost always either revise and resubmit or provide further clarification. Although, the turnaround time for resubmissions was generally shorter. Therefore in our experience, a researcher can expect a delay of approximately two working weeks (and longer in some cases) in order to get drafts or presentation materials released from the Secure Data Service.

Further difficulties were encountered due to recurrent issues associated with my institution's IT system. For instance, access to the Secure Data Service desktop application was also periodically revoked due to changes to the standard institutional profile or lost due to hardware failure. Additionally, although postgraduate research students are provided with a group study suite, data restrictions prevented me from using this; due to the potential risk of unauthorised persons overlooking or accessing sensitive data. Moreover, office space was also at a premium within the institution and so finding single occupancy study space proved particularly troublesome. This resulted in numerous relocations through the course of conducting the research. However, towards the end of my writing up period a Safe Room was set up at the University and we used this on a few occasions. However, use of the Safe Room requires booking in advance (providing at least one working week as notice) and is subject to even tougher restrictions, i.e. no unauthorised materials can be brought into the room such as: mobile phones, notes, paper, pens, etc. This is because other users have access to even more sensitive data than I. We believe that the issues we encountered throughout this research go beyond what is typically encountered by a postgraduate researcher. Moreover, these issues will likely continue to impact on the future development of this work, should we need to revisit the data. Specifically, one can expect significant delays, not only in accessing the data but also in getting the subsequent output released.

ACKNOWLEDGEMENTS

I would like to express my gratitude to the University of East Anglia and Professor Neil Ward (in his then capacity as Executive Dean of the Social Sciences Faculty) for the provision of the Dean's Scholarship which funded this PhD. Moreover, I would like to particularly thank my supervisors, Professors Sara Connolly, Neil Ward and Dr Fabio Aricò for their encouragement, help and support throughout the research process. I would also like to express my gratitude to Dr Jeremy Schildt (a learning enhancement tutor at the University of East Anglia) who provided thesis writing advice and Mr Simon King and Miss Kayleigh Maguire who both diligently proof-read early drafts of this work. Furthermore, I would also like to thank the UK Data Archive and the Secure Lab Team for facilitating access to the various datasets used in conducting this research, namely the National Child Development Study (1958), British Cohort Study (1970) and LSYPE (2004). I would also like to thank Mr Tim Thair (formerly part of Longitudinal Surveys Team, DfE) who provided additional variables with detailed explanations and was on hand to answer queries with respect to the LSYPE. In addition to my external examiners Professor John Micklewright (UCL) and Dr. Jo Blanden (Surrey) for your time and valuable insights.

I would also like to thank my colleagues in the School of Economics, the School Manager (Ms. Gina Neff), Clerical Assistant (Ms. Shiona Brereton) and participants at the various research seminars I presented at. Specific thanks must go to current and former postgraduate research students in the School of Economics: Saeed Alkatheeri, Anthony Amoah, Zoë Bett, Natalia Borzino, Michael Brock, Carsten Creed, Fabio Galeotti, Paul Gorny, Ioannis Pappous, Benjamin Radoc, Abdul Rehman, Antonios Staraz, Frederick Wandershneider, Mengjie Wang, Graciela Zevallos-Porles and Jiwei Zheng. Moreover, I also wish to express my sincere thanks to academic colleagues from other schools and institutions: Jake Anders, Patrick Barrow, Adrian Bryne, Cigdem Gedikli, Robert Jenkins, Chidiebere Ogbonnaya, Sally Piff, Georgios Papadopoulos, Nicholas Vasilakos and Adrian Villaseñor. I am sure there were many others to whom I owe thanks and I apologise unreservedly for any omissions.

DEDICATION

To my wonderful and inspirational grandmother (Mrs Janet Foord) who sadly passed away before I could complete this thesis. Your faith and the support you gave me throughout writing this thesis was unwavering. You never doubted that I would finish. Although I never got the chance to tell you, I would have very much liked for you to see me graduate, as I know how proud of me you would have been. Your love, kindness and support will forever be my inspiration.

I would also like to dedicate this thesis to three other influential people. The first is to Kayleigh who felt she had to wait for me to complete this thesis even though, your frustration at times was clearly evident! I would also like to dedicate this thesis to Aurima Paleviciute, who I spent the first few years of the PhD co-sharing several residences in Norwich. Lastly, Rebecca Baker, both in her capacity as my learning enhancement mentor and then, later, as a close personal friend.

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LIST OF ACRONYMS

The following acronyms will be introduced and then used throughout the thesis:

- **A-Level** - Advanced Level Qualification
- **Add Health** - National Longitudinal Study of Adolescent Health
- **AHRC** - Arts & Humanities Research Council
- **AIC** - Akaike Information Criterion
- **API** - Age Participation Index
- **BBBS** - Big Brothers/Big Sisters of America Programme
- **BBS** - British Birth Study
- **BCS70** - British Cohort Study 1970
- **BHPS** - British Household Panel Study
- **BIC** - Schwarz's Bayesian Information Criterion
- **BIS** - Department for Business, Innovation & Skills
- **CRT** - Cultural Reproduction Theory
- **DCMS** - Department for Digital, Culture, Media & Sport
- **DfE** - Department for Education
- **EMA** - Educational Maintenance Allowance
- **ESRC** - Economics & Social Research Council
- **FE** - Further Education
- **FSM** - Free School Meals
- **GCSE** - General Certificate of Secondary Education
- **GHS** - General Household Survey
- **GPA** - Grade Point Average
- **HCT** - Human Capital Theory
- **HE** - Higher Education
- **HEFCE** - Higher Education Funding Council for England
- **HEI** - Higher Education Institutions
- **HEIPR** - Higher Education Initial Participation Rate
- **HESA** - Higher Education Statistics Agency
- **HSC** - Harter Scholastic Competence Score
- **ICT -** Information and Communication Technology
- **IMD** - Index of Multiple Deprivation
- **IQ** - Intelligence Quotient
- **IV** - Instrumental Variable Analysis
- **KS** - Key Stage
- **LEA** - Local Educational Authority
- **LFS** - Labour Force Survey
- **LSYPE** - Longitudinal Study of Young People in England
- **MCS** - Millennium Cohort Study
- **NCDS** - National Child Development Study
- **NELS** - National Education Longitudinal Study
- **NESS** - National Evaluation of Sure Start Team
- **NPD** - National Pupil Database
- **NS-SEC** - National Statistics Socioeconomic Classification Class
- **NVQ** - National Vocational Qualification
- **Ofsted** - Office for Standards in Education, Children's Services and Skills
- **OLS** - Ordinary Least Squares
- **PCA** - Principal Components Analysis

- **PIAT** - Peabody Individual Achievement Test
- **PLASC** - Pupil Level Annual School Census
- **PMS58** - Perinatal Mortality Survey 1958
- **ppts** - percentage points
- **PSID** - Panel Study of Income Dynamics
- **PTO** - Parent-Teacher Organisation
- **RAE** - Research Assessment Exercise
- **s.d.** - Standard Deviation
- **SC-IQ** - Social Capital Integrated Questionnaire
- **SCCS** - Social Capital Community Benchmark Surveys
- **SEM** - Structural Equation Model
- **SOCAT** - Social Capital Assessment Tool
- **SPPA** - Survey of Public Participation in the Arts
- **SSLP** - Sure Start Local Programme
- **SV** - Berndt & Miller School Value score
- **WP** - Widening Participation
- **WVS** - World Value Surveys
- **YCS** - Youth Cohort Study

1. INTRODUCTION

Participation statistics reveal that approximately 42% of young persons entered HE in the 2015/16 academic year (BIS, 2017b). A higher proportion of UK young people participate in HE today than at any point in history. However, despite increasing rates of HE participation, research conducted in the early-mid 2000s indicated that the socioeconomic gap, i.e. the difference in progression rates into HE by young persons from more- and less-affluent backgrounds, has widened. This has raised concerns about the equality of opportunities to participate in HE by socioeconomic group, particularly in light of the benefits (both pecuniary and non-pecuniary) attributable to the individual. Thus far the UK HE participation literature has primarily focussed on the role of individual and background characteristics in understanding an individual's decision to participate in HE[3]. On the other hand, a small number of mostly US-based studies have shown that cultural and social influences are associated with a range of youth outcomes, including education. We believe a UK-based study which explores whether measures of Cultural and Social Capital are associated with HE participation is both novel and has potential to contribute to understanding.

To contextualise the forthcoming research, we begin by conducting a general literature review. Here we outline UK HE participation over time whilst also highlighting changes in educational policy. We then, adopting a Human Capital approach, proceed to formalise an individual's decision to participate in HE. After which we discuss some recent evidence relating to how individual and family background characteristics are associated with HE participation. We then discuss a selection of recent evidence from the literature which provides estimates of the pecuniary and non-pecuniary benefits of participating in HE, attributing to the individual and society more generally. We do this, recognising the fact that significant HE expansion has occurred since 1960s, in order to justify why we are interested in HE participation. Then as we suspect that cultural and social influences might also affect HE participation we introduce and outline the concepts of Cultural and Social Capital.

As such, our first empirical chapter incorporates relatively rudimentary measures of Cultural and Social Capital in a model that estimates the likelihood of HE participation

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[3] Some research effort has been put into laying the ground work to explore Cultural and Social Capital within a UK context. For instance, the ESRC funded a project 'Cultural Capital and Social Exclusion: a critical investigation, 2003 to 2005'.

for two British birth cohorts. These are the National Child Development Study (NCDS) and British Cohort Study 1970 (BCS70). We opt to use these, admittedly dated, studies as they have been well utilised by past researchers to investigate trends in UK HE participation (Blanden & Machin; 2004, Galindo-Rueda et al., 2004; Machin & Vignoles, 2004; Galindo-Rueda & Vignoles, 2005) and will therefore serve as a useful point of comparison in terms of the additional value associated with our approach. Our results show that elements of our measures of Cultural and Social Capital exhibit statistically significant associations with an individual's likelihood of future participation in HE.

Having established these associations, we then determine whether this is also true for a more recent cohort of young people born between 1989 and 1990, namely the LSYPE. Moreover, the richness of the data also allows us to expand our model to include a measure of young person's Habitus (embodied Cultural Capital) and two additional contextual measures of Social Capital (at home and at school). The inclusion of a measure of Habitus within an empirical study of HE participation is important because aims, aspirations and expectations have been shown to exhibit significant associations with HE participation in UK based studies (Anders & Micklewright, 2015). On the other hand, the Habitus literature also indicates that Cultural Capital associations will likely be exaggerated (positively biased) where Habitus is omitted (Dumais, 2002; Gaddis, 2013). Moreover, the inclusion of two additional contextual measures of Social Capital, namely at home and at school, follows a more recent trend in the Social Capital literature (Parcel & Dufur, 2001; Crosnoe, 2004; Hoffmann & Dufur, 2008; Dufur et al., 2013a; 2013b; 2015). Our results here demonstrate that the addition of our measures of Habitus and further contextual sources of Social Capital also exhibit statistically significant associations with HE participation. Our expanded conceptualisation also improves the explanatory power of the model over and above that of simply including general measures of Cultural and Social Capital (in addition to individual and family background characteristics). Furthermore, our results also point to differences in the operationalisation and resulting associations of these measures by gender. Aside from computing marginal effects at representative values to contextualise these associations, we are unable to comment on whether Social Capital in one particular sphere exhibits boosting or compensating effects.

Our third empirical investigation complements our previous work by controlling for school attended. This is important because school attended is suspected to exhibit a causal effect on academic attainment (Dearden et al., 2011; Slater et al., 2012) through Human Capital accumulation. Moreover, the type of school attended may also influence the creation of other capital concepts (Cultural and Social Capital). To control for school attended, we adopt a multi-level modelling framework. This allows us to unpick school characteristics that explain high school continuation rates into HE, whilst taking account of possible correlations between the experience of pupils who attend the same school. Specifically, we estimate a series of random intercept models for school attended whilst controlling for a vector of school characteristics. This process allows us to uncover potential differences in progression rates between schools, ceteris paribus. The results confirm that school attended does indeed appear to matter whilst leaving our earlier findings largely unchanged.

Importantly, we believe this work is of interest to policy makers owing to its potential to yield new insights into the determinants of HE participation. Specifically, we argue that based on our findings, cultural and social influences appear to matter and exploring these association further may highlight an underutilised avenue for achieving WP objectives.

2. GENERAL LITERATURE REVIEW

"*Understanding the HE participation decision and the potential impact of cultural and social factors. A review of the relevant literature.*"

2.1 Introduction

The aim of this review is to both inform the reader about the current state of the UK HE literature and to make the case for the forthcoming research. We commence this review by outlining the generally increasing trend in UK HE participation since the 1960s. We then discuss current understanding of the factors affecting HE participation and formalise the decision using Human Capital Theory (HCT). Then we move on to discuss the empirical evidence relating to the influence of individual and family background characteristics. Given generally increasing rates of HE participation in the UK and elsewhere, we discuss the implications on returns to HE; investigating whether acquiring a first degree continues to represent a good personal investment. In this review we place particular emphasis on identifying gaps in current understanding of HE participation, arguing that cultural and social influences matter.

This chapter is structured as follows: Section 2.2 outlines trends in UK HE participation over time. This is followed by section 2.3 which outlines HCT (and alternative theoretical approaches) to formalise the HE participation decision. We then discuss some recent empirical evidence relating to the influence of ability and family background. Section 2.4 establishes whether investing in HE still represents a good personal investment by discussing the evidence on returns. Section 2.5 highlights where we believe the gaps in current understanding exist and argue that cultural and social factors are also important, with research in this area having the potential to contribute significantly to the debate. Section 2.6 concludes.

2.2 Increasing participation in UK Higher Education

In the last few decades HE participation in the UK has expanded rapidly, New Labour (1997-2010) pledged, in its 1997 manifesto, that 50% of young people aged 17 to 30 would participate in HE by 2010. Historically, HE participation in the UK has been recorded using distinct but fairly comparable measures, the Age Participation Index (API) and the Higher Education Initial Participation Rate (HEIPR).

> "*The Age Participation Index is defined as the number of UK-domiciled young people (aged less than 21) initial entrants to full-time and sandwich undergraduate courses of Higher Education, expressed as a proportion of the average 18 to 19 year old GB population.*" (DIUS, 2008, p.2).

The API excludes part-time students and can be represented algebraically as:

$$API = \frac{\sum_{i=17}^{20} IE_i}{\frac{1}{2}\sum_{i=18}^{19} POP_i} \quad \textbf{(1)}$$

Where IE_i refers to initial entrants into HE between the ages of 17 and 20 and Pop_i refers to the population aged between 18 and 19.

The API was, however, abandoned in 1999 as the government's principal statistical measure of HE participation in favour of the HEIPR for England. This change occurred due to the focus of the Labour government (1997 to 2010) on life-long learning. Unlike the API, which focused on youth HE participation, the HEIPR extends the measure to 17 to 30 year olds[4]. Northern Ireland and Scotland continue to use the API, Wales currently uses an alternative the Standard Participation Rate. HEIPR is calculated as follows:

> "*HEIPR counts English-domiciled 17-30 year old higher education students [both part-time/full-time]. Students are counted if they participate for at least six months on a course expected to last for at least six months, except that students are not counted if they have participated in Higher Education previously for at least six months. Students at FECs in England, Scotland and Wales are counted if they are on courses designated as National Vocational Qualification Level 4 or above, or listed as Higher Education courses*" (BIS, 2017a, p.5).

Algebraically the HEIPR can be represented as:

$$HEIPR = 100\sum_{i=17}^{30} \frac{IE_i}{POP_i} \quad \textbf{(2)}$$

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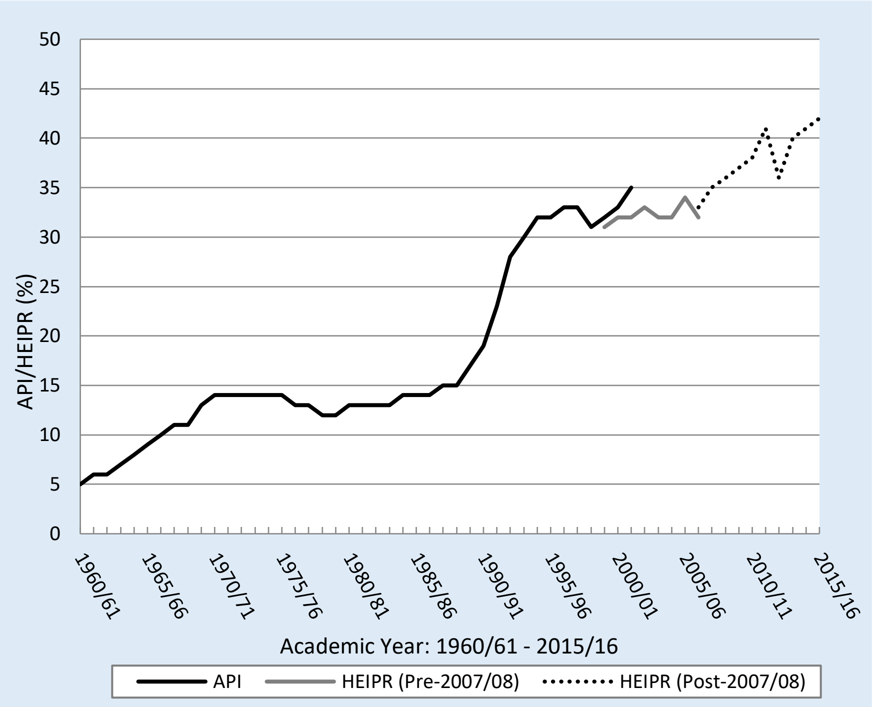
[4] These measurement changes also coincided with the introduction of tuition fees in England in September 1998 and significant changes to HE policy.

The HEIPR is broader than the API as it includes part-time students and students from English, Welsh and Scottish Further Education (FE) colleges. Further methodological changes were adopted in 2007 which adjusted the population estimates to ensure students who had already participated for at least 6 months were included only once. In Figure 1, rather than using HEIPR 17 to 30 (HEIPR30) participation figures, we utilise the HEIPR 17 to 20 (HEIPR20) for consistency with the API. Typically, the HEIPR30 puts participation some 6 to 8 percentage points (ppts) higher than the HEIPR20.



<u>Source</u>: This graph was adapted from Chowdry et al. (2010) who sourced the original version from Finegold (2006). It has also been supplemented with HEIPR figures from two sources: DIUS (2009) and BIS (2017b).

Figure 1: Trends in UK Higher Education participation: 1960/61 to 2015/16

Figure 1 depicts a general increase in HE participation from 1960 (5%) to 1969 (13%) academic years. This period of expansion was followed by a period of fairly constant HE participation from 1969 to 1988, ranging between 12% and 15%. The most dramatic period of HE expansion occurred pre- New Labour 1988 to 1994. In this period, HE participation more than doubled from 15% to 32%. This period of expansion was followed by a period of relatively stable HE participation from 1994 to 2001, ranging between 31% and 35%. Note the slight discontinuity when the new HEIPR methodology for measuring HE participation was introduced in 1999 as seen in Figure 1. Up to 2005 (but not including 2005) HE participation, as recorded by the pre-2007 methodology, reveals a fairly constant participation rate at around 32%, plus or minus a percentage point from 1999 to 2004. Furthermore, we observe increasing HE participation with the post-2007 methodology rising from 33% in 2006 to 42% in 2015. We also observe a drop of 5ppts in the 2012 academic year, which may be attributable to the tripling of tuition fees in 2012, and subsequent partial recovery to 40% in 2013.

More generally the pattern observed in Figure 1 does appear to correspond closely with changes in HE policy. For instance, maintenance grants were introduced in 1962 to finance the direct costs of HE. In 1980 the value of a grant increased by approximately a multiple of four. Note that the HE participation rate dipped slightly 1976 to 1979, then increased gradually between 1980 and 1988. Subsequently, in 1989 maintenance grants became means-tested (with the maximum award capped) and the Student Loans Company (a publicly funded student loan body which offered low-interest loans to students to help with living costs) was established. Subsequently the HE participation rate increased quickly between 1989 and 1992, having remained fairly static since 1970.

The publication of the Dearing Report in 1997 marked a sea change with respect to funding for HE. Pre-1998 university places were entirely funded from general taxation. Post-1998 tuition fees were introduced for the first time across the UK, with students expected to contribute £1,000 per year to the cost of their study. Additionally, means-tested maintenance loans were also bought in to replace maintenance grants to help with living expenses for all but the poorest students. This marked the start of a gradual transition in the transfer of the cost burden for HE from the taxpayer to the student. Nevertheless, the HE participation rate continued to rise albeit at a more gradual pace. However, it is important to note here that the political devolution processes in Scotland, Wales and Northern Ireland from the late 1990s; have resulted in different HE funding arrangements in these countries. The HEIPR figures take this into account as they only relate to English-domiciled 17 to 20 year olds whereas the API is UK wide[5].

In 2004 the maximum tuition fees that universities in England could charge was raised again to an inflation-adjusted cap of £3,000[6], with Northern Ireland and Wales, but not Scotland, following suit in 2006 and 2007 respectively. In order to mitigate the impact

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[5] Coincidently this may also explain why the API and HEIPR20 initially tracked one another and then began to diverge in the 2001/02 academic year.

[6] This happened despite the publication of The Higher Education White paper in 2003, and other emerging evidence, which initiated a policy shift away from aggregate participation towards more focus on equitable participation in HE.

of higher tuition fees, publicly subsidised student loans were introduced to help cover the cost, meaning that the direct costs of study were no longer payable upfront. The repayment of these loans is typically income contingent, although different repayment schedules exist within (based on the year in which the loan was taken out) and between countries in the Union.

Tuition fees were increased yet further in England in the 2012 academic year to £9,000[7], whilst Welsh, Scottish and Northern Irish students studying in their countries were left unaffected. The increase in tuition fees in England was loosely based on recommendations by the Browne Report (2010)[8]. Politically, it was hoped that raising the fee to £9,000 would create a functioning market within the sector, with HE providers charging differential fees. This policy, however, failed to achieve its aims as the vast majority of Higher Education Institutions (HEI) charged a tuition fee of £9,000[9] for the 2012 academic year. Nevertheless, universities wishing to charge over £6,000 per annum in tuition fees are required to complete an Access Agreement. These agreements outline the universities' strategies with respect to creating more socially inclusive student intake. Furthermore, in April 2017 legislation was passed which enabled tuition fees to rise to £9,250 from September.

Clearly individual contributions to university finances, in the form of tuition fees, have become an increasingly important source of revenue for universities. Particularly, when coupled with the simultaneous withdrawal of public funding in the form of teaching grants, etc.. Despite this, the public sector remains the largest contributor to university funding through the provision of infrastructure, teaching and research grants through Higher Education Funding Council for England (HEFCE). However, it is important to note that charging £9,000 per year in tuition fees to home and EU citizens has made England one of the most expensive places in Europe to study for a HE qualification. In

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[7] The rise in fees has also been accompanied by the addition of a well-resourced national scholarship programme and a combination of university and public financial assistance in the form of means-tested tuition fee bursaries and cost of living grants. The increase in fees was also accompanied by the removal of the cap on student numbers in 2015. More generally it will be interesting to see whether these and subsequent changes make the bursary system more equitable. As Wyness (2016) reports, using data collected from 22 universities between 2006 and 2011, that the decentralised nature of the system has created inequalities in aid receipt. Given that the government in 2006 that universities had to spend 10% of their fee income on non-repayable bursaries to poor students.

[8] The Browne Report (2010), whilst advocating that individuals should bear more of the cost for HE, also argued for the replacement of the current repayment schedule with a graduate tax.

[9] It was estimated that universities would need to charge £7,000 in fees just to replace lost income from the withdrawal of public support.

contrast, HE is still free in Scandinavian countries; fees in the rest of Europe rarely exceed €3,000 per semester (equivalent to approximately £2,727 at an exchange rate of £1:€1.10) and, in most cases, are substantially lower. The UK HE sector has become increasingly internationalised, attracting a high and growing proportion of international students. Universities are free to set international fees, which were until 2012 set at a multiple of UK/EU fees. In the 2011/12 academic year international student fee revenue accounted for over 20% of universities income, some £5.7 billion annually (UUK, 2014, p.4).

Of course, to study in the UK, students will also need to reside here for a good proportion of the year. This will result in wider benefits on the economy in terms of their off-campus expenditure, generating both output and employment. For instance, in the 2011/12 year off-campus expenditure amounted to £4.9 billion annually (UUK, 2014, p.5). However changes in student visas in 2015 introduced by the then Home Sectary, Theresa May, to tackle immigration abuse have made it more difficult for international students to study and work in the UK. For instance, institutions now need to obtain the 'highly trusted sponsor' status in order to recruit and educate non-European students in the UK, whilst applicants need to meet stricter student qualifying criteria[10].

There is concern that charging high fees could deter individuals from less affluent backgrounds from participating in HE. Nevertheless, the UK operates one of the most progressive student loan repayment systems in the world. For instance English and Welsh students who defer entry, i.e. those not taking a gap year who began their course after 1st September 2012, only commence repayment[11] of their combined student loan if their income inflation-adjusted exceeds £21,000 in future years[12]. Moreover, this

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[10] To study in the UK students are now required to demonstrate a higher degree of fluency in English. Students at universities and public FE colleges retain their current work rights (up to a maximum of 20 hours per week), whilst other students lose their entitlements. Work placements outside of universities have also been restricted. The option to stay in the UK for two years post-study in order to facilitate job search has also ended, with only those graduates with a valid offer of work and in Tier 2 of the points-based-system allowed to stay. Families are now forbidden from accompanying students on longer courses unless they are either post-graduate students attending a university or government sponsored students. Time spent on student visas is also capped at 3 years for lower education levels, 5 at higher, with no limit for study at or above degree level.

[11] 2012 also saw the introduction of a positive real interest rate. Previous student loans only indexed the amount to inflation and therefore came with a public interest rate subsidy.

[12] Those individuals who started a course before the 1st September 2012 were charged a lower inflation-adjusted tuition fee of £3,000 and faced a different repayment scheme. Here, individuals would repay 9% of their salary in excess of an inflation-adjusted £14,000 until either the debt was cleared, or 25 years had elapsed post-eligibility.

repayment threshold is set to increase to £25,000 from the 2018/19 academic year. If this earning criterion is met, 9% of earnings over this inflation-adjusted figure will be automatically deducted by HM Revenue through Pay-As-You-Earn tax. Moreover, any debt outstanding after 30 years post-study is written off. Indeed a large proportion of graduates (typically those from poorer backgrounds) are unlikely to pay off the principle of the loan excluding accumulated interest. Currently, the government is also re-considering its plan to sell student loans made between 1998 and 2012 (packaged up as financial bonds) to major private investors, having previously sold those made prior to 1998.

The 2012 funding reforms did, however, include more generous up-front support ranging £670 to £880 for participants from families with a household income below £25,000 (Chowdry et al., 2012, p.215). These reforms however scaled back support in the form of maintenance grants through a reduction in the qualifying income criteria from £50,695 to £42,600. Nevertheless, for those students who did still qualify for the full maintenance grant stood to benefit substantially through the National Scholarship Programme[13]. For example, under the pre-2012 HE funding reforms, students in receipt of the full maintenance grant (household income ≤ £25,000) received a minimum bursary of £347 per annum. Post- reform, students in the same circumstances would receive a £3,000 subsidy from the government in fee waivers, cash bursaries[14] and other benefits; which is also matched by a contribution from the university.

Chowdry et al. (2012) simulated the likely financial impact for students, universities and public/private contribution of the 2012 HE funding reforms in England. They compared the distributional aspects of the change to those participating under the 2011/12 fee regime. To conduct the analysis, the authors utilise simulated graduate earnings profile data[15]. They predicted that, in light of fee increases, the average student over a lifetime will be approximately £8,850 worse off under the new system, although this figure does

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[13] The National Scholarship Programme was subsequently abolished in 2015/16 academic year. Subsequent reforms in 2016 also replaced maintenance grants with additional loans. An analysis by the IFS (2017) concluded that the impact of this is limited as the majority of eligible students are unlikely to repay this in full.

[14] The Government's contribution in the form of the cash bursary element of the total subsidy is limited to £1,000.

[15] The simulated earnings data was developed by Dearden et al. (2006) and subsequently used in Dearden et al. (2008) and Chowdry et al. (2011). The data specifically accounts for variations in returns by incorporating employment mobility and spells of work. Then was updated in Chowdry et al. (2012) to also include information on university fees, student support packages and the 2007/08 financial recession.

mask some important distributional changes. For instance, despite higher fees, the poorest 29 percent of graduates are expected to be better off under the new funding regime, as they are unlikely to repay the principal in full before the repayment period ends. On the other hand, the top 15% will pay back more than they owe, given the introduction of an income-contingent positive real interest rate (RPI + 3%). The tax payer does stand to collect twelve percent less on student loans (66p in the GBP as opposed to 75p), which is largely the result of the more generous repayment scheme and higher debt expirations. However, this is more than countered by a predicted fall of 40 percent in real terms over 2010 to 2014 in public grant funding, equating to an average overall saving of £2,500 per graduate. Universities, on the other hand, are expected to be better off given the additional fee income. Overall, the authors conclude that the 2012 HE funding reforms, offers a more progressive funding regime.

The conclusions of Chowdry et al. (2012) were largely supported by a more recent briefing note by IFS (2017) which considered the comparative differences between HE funding regimes in the past compared to the present and options for the future. The report does however argue that due to a decline in graduate earnings growth over the proceeding decade, coupled with the fact that most universities elected to set fees at the maximum level, the overall saving for the public purse will be less than expected. Nevertheless, the comparative cost of the 2011 and 2017 systems is £9.0bn and £5.9bn respectively, assuming the highest 20% of earners all take out loans (IFS, 2017, p.14).

To summarise, HE participation in the UK, has been on a continuous upwards trajectory since the early 1960s. Given that approximately half of all young people now participate in HE in England, compared to a small minority in the early 1960s, this has significantly changed the social landscape. What is also clear is that, in order to fund the expansion in HE, the public sector's contribution has fallen. This reduction in public funds has been made up for by higher contributions from individual learners in the form of tuition fees, while universities have been asked to make efficiency savings. Despite these challenges, the UK HE sector continues to perform well internationally with a number of UK institutions regularly ranking in the world top ten league table, e.g. Times Higher Education World University Guide. However, looking forward the UK HE sector does faces a number of challenges. For instance, there is concern that university budgets rely too heavily on the fee income which is generated by high intakes of international students. This was brought sharply into focus given the restrictions on immigration affecting international student numbers. Moreover, in order to charge high fees universities are also obliged to set and achieve more equitable student intakes and other WP objectives. Having described the increasing trend in UK HE participation, as well as the influence of and corresponding changes in educational policy; we now outline our understanding of the HE participation decision.

2.3 Explaining Higher Education participation

We begin this subsection by discussing two core capital concepts (Economic and Human Capital), before moving on to outline the HE participation decision. Lastly, we discuss how individual and family background characteristics influence HE participation by considering some recent empirical evidence.

2.3.1 Economic Capital

Capital, as economists use the term, may be best described as assets that have been produced or resource endowments which are used or invested in order to produce other assets or resources. While Financial Capital is a concept more associated with firms than individuals, we refer to Economic Capital as the monetary or exchange value of resources the individual has access to and can draw on, e.g. household resources. Other forms of capital, such as Human, Cultural and Social Capital are less measurable and therefore less readily qualify as capital in the strictest sense. Yet are still regarded as such. We now describe HCT and set out the alternative theoretical frameworks which is used to underpin our understanding of the HE participation decision.

2.3.2 Human Capital Theory

HCT was pioneered by Becker (1962; 1975), Mincer (1958; 1974) and Schultz (1961, 1963). Mincer’s (1958) seminal work on of Human Capital begins by outlining a model which broadly describes the earnings distribution. The model assumes that the ability of workers is homogenous, as are opportunities to enter specific occupations. Occupations, however, differ with respect to the amount of training required. Labour market participation is finite and of fixed length across individuals. Upon entering the labour market, workers decide to enter a specific occupation and acquire the necessary training, with their choice to enter a specific occupation depending upon the discounted stream of future revenues minus the financial cost of training. If we assume that training is costless, the discrete discounting process takes the following form:

$$V_n = \sum_{t=n+1}^{l} \left(\frac{1}{1+r}\right)^t \tag{3}$$

Where (l) = length of working life plus training, (V_n) = present value of their life-earnings at the start of training, (r) = discount rate applied to deferred earnings, (t) = time in years and (n) = years of training.

Similarly, the discounting process when continuous:

$$V_n = \int_n^l (e^{-rt})dt = \frac{1}{r}\left(e^{-rn} - e^{-rl}\right) \tag{4}$$

Where (a_n) annual earnings of individuals with n years of training, (d) = difference in years of training and (e) = natural logarithm base. Therefore using continuous discounting the present value of life-earnings of individuals with $(n-d)$ years of training is:

$$V_{n-d} = \frac{a_{n-d}}{r}\left(e^{-r(n-d)} - e^{-rl}\right) \tag{5}$$

Equating $V_n = V_{n-d}$ yields, $k_{n,n-d}$, the ratio of annual earnings of individuals differing by d years of training is expressed by:

$$k_{n,n-d} = \frac{a_n}{a_{n-d}} = \frac{e^{-r(n-d)} - e^{-rl}}{e^{-rn} - e^{-rl}} = \frac{e^{r(n-d)} - 1}{e^{r(l-n)} - 1} \tag{6}$$

From this it can be deduced that workers with higher levels of training can command higher pay. There also exists a positive relationship between earnings at different training levels and the discount rate. Perhaps less obvious is that relative income differences are greater at higher training levels. Algebraically, Mincer expresses the annual ratio of earnings between persons of differential training is at least as great as:

$$k_{d,0} = \frac{e^{rl} - 1}{e^{r(l-d)} - 1} \tag{7}$$

From this, annual earnings, which correspond to d years of training, differ not by an additive constant, but by a multiplicative factor k[16].

Becker (1975), another pioneer and main contributor to HCT, makes the distinction between general and specific training, two types of on-the-job training. General training equips workers with transferable skills which are useful for their current job but can also be transferred between jobs. Conversely, skills gained through participation in specific training are non-transferrable. Economic theory tells us that firms incentivise workers to participate in specific training by covering the cost of the training and paying a wage above their original marginal productivity but below their new higher one. As such the firm makes a return on their investment over time by recouping the cost of the training through the difference between the worker's wage and their higher marginal productivity. However firms will not ordinarily cover any of the costs as associated with general training, as a worker can simply complete the training and then move to another firm and be paid a wage equal to their actual marginal productivity. Arguably investing in HE can be thought of as general training due to the transferable nature of the skills developed. Nevertheless, some firms and the public sector particularly (e.g. medical, teacher training, etc.) which offer more specific courses to offset some or all of the costs associated; in return for a contractual agreement where the individual agrees to work for the firm/public sector for a set amount of years. Often failure to abide by this agreement will leave the individual liable for the direct cost of their training.

Spence's (1973) Job Market Signalling Model, on the other hand, offers an alternative explanation to HCT with respect to explaining the patterns we observe in the personal income distribution. Specifically, the model assumes, that in the job market the primary signallers are relatively numerous but are in the market infrequently. The latter criterion excludes the possibility of these individuals developing reputational effects. It also simplifies reality by assuming that there are only two types of workers in the population: those who have been endowed with low (g_L) and high (g_H) ability. Employers also hold pre-formed opinions on the conditional probability distribution of workers' inherent productivities but are unable to determine to which group (low or high ability) a worker belongs. This assumption is justified by the fact that jobs may take time to learn, require specific training or the market may be characterised by imperfect information. Moreover, Spence (1973) argues that Education (E) could conceivably act as a viable

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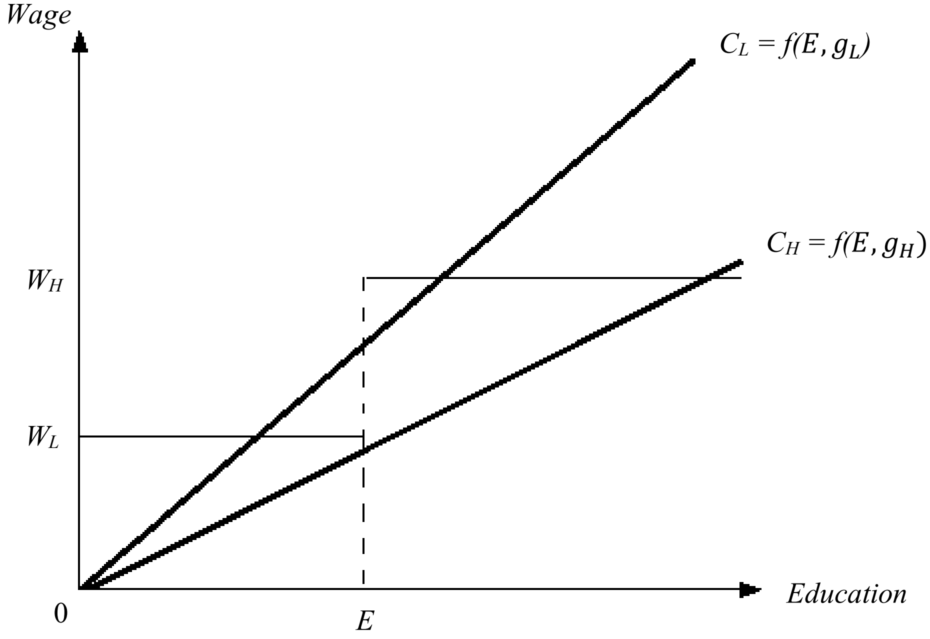
[16] In Eq. (7) the change in $k_{n,n-d}$, given a change in n, is negligible. Therefore, k for all intents and purposes, can be treated as constant.

signal but only if acquiring education is costlier for low ability workers. This implicitly assumes that a worker's inherent ability is negatively correlated with effort. Let us therefore suppose that the cost of investing in education for the two groups is given by the function $C_L = f(E, g_L)$ for low ability and $C_H = f(E, g_H)$ high ability workers. Note that low ability workers find it costlier to acquire years of education and thus their cost function exhibits a steeper slope. Figure 2 provides an illustration of Spence's (1973) job signalling model.



Source: Adapted from Spence (1973) p.363

Figure 2: Job-Market Signalling: Separating Equilibrium

The model depicted in Figure 2 provides the necessary incentive for a separating equilibrium to emerge. As it gives the sole incentive for high ability workers to invest in the required amount of education (E^*) as $W_H - C_H(E^*) > W_L$. Low ability workers, on the other hand, find the cost of acquiring E^* prohibitively expensive and instead invest in zero years of education and accept a wage of W_L, Alternatively, if the level of education is set too high (neither group invests) or low (both groups invest) a pooling equilibrium will instead emerge. Under this scenario, risk-neutral employers will pay a wage (W_A) equal to the average worker's marginal productivity of labour (MPL_A).

Critics of this model may argue that it is not in society's interest to invest in education if it is costly, since this investment does not enhance productivity. Their logic, however, fails to appreciate that if all workers are paid their average productivity, low-ability workers are better off and high-ability workers are worse off. Therefore, in the presence of a credible signalling mechanism, a separating equilibrium such as that described is efficient. Despite incurring the cost of education high ability workers are strictly better off than under a pooling equilibrium where all workers are paid a wage equal to the average marginal productivity $(W_A = MPL_A)$. However, perhaps the most compelling critique of Spence's (1973) signalling approach is that if education increases productivity by more than the cost of acquiring it will no longer act as a credible signal. This may explain why HCT has gained wider acceptance and is subsequently how we frame our understanding of HE participation.

To summarise, models of screening such as those developed by Spence (1973), Arrow (1973) and Stiglitz (1975), make the case that HCT explains the variation in the income distribution through increases in productivity alone and takes no account of the signalling value of education[17]. We believe, that there is sufficient evidence to suggest education has a productivity-enhancing element which, in certain contexts, may also contain a signalling aspect. Moreover, Beck et al. (1978), Viscusi (1978) and Dolton et al. (1989) suggest that earnings may also depend upon individual and job characteristics leading to the emergence of hybrid models. In the following section, using a HCT framework, we outline our understanding of the HE participation decision.

2.3.3 Higher Education participation decision

HCT suggests that individuals invest in formal education, in order to build up their store of Human Capital. Accumulating Human Capital increases an individual's productivity. As firms pay a wage equal to an individual's marginal productivity, the individual benefits by receiving a higher wage as well as other non-pecuniary benefits. Therefore, a rational individual will accumulate Human Capital until the net private benefit from participating in an additional year of education is zero. Figure 3 illustrates a possible age-earnings profile for graduates and non-graduates.

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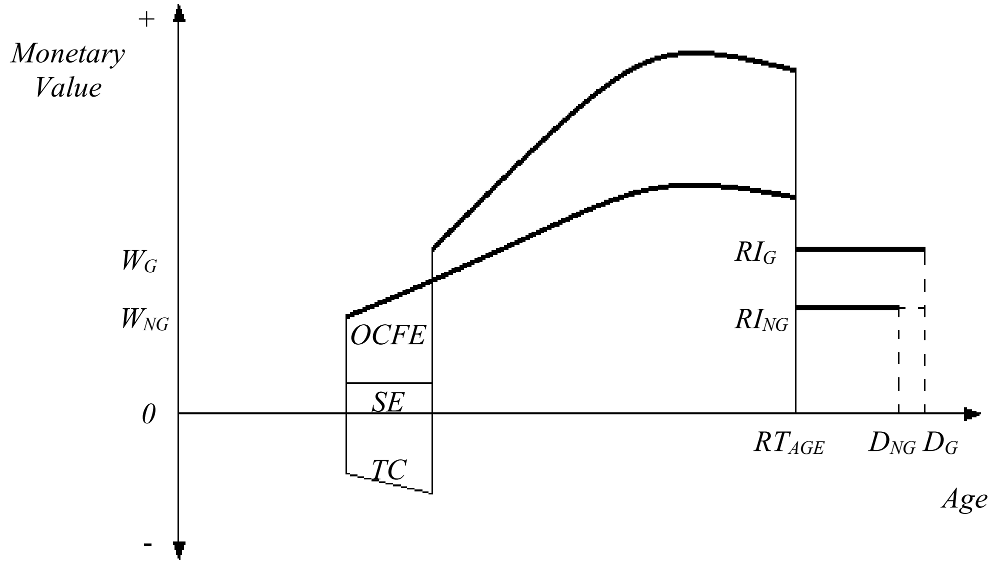
[17] There may be particular signalling significance in the UK at 11 (GCSEs), 13 (A-Level), 16 (first undergraduate degree) and 16+ years (higher degree) of schooling.



Source: Adapted from Aldrich (2010) p.15

Figure 3: Comparative illustration of a graduate and non-graduate age-earnings profiles

Where TC equal to tuition costs (excluding forgone earnings), SE study earnings, $OCFE$ opportunity cost of forgone earnings, W_G and W_{NG} graduate and non-graduate income, RI_G and RI_{NG} graduate and non-graduate retirement incomes, RT_{Age} retirement age, D_G and D_{NG} age of death for graduates and non-graduates.

Individuals choosing to study for an HE qualification bear both direct and indirect costs of education. Direct costs of study may include course fees, living expenses and costs of materials, field trips etc. Indirect costs are largely comprised of labour market earnings forgone during the period of study. Part of this may be covered by engaging in some part-time employment whilst studying. Taken together, earnings are initially negative for graduates, however, once education is complete graduate earnings on average start marginally higher than non-graduates whilst also experiencing faster wage growth. This continues to be the case until the individual is in their late 50s. Typically, earnings then begin to gradually decline as the individual nears retirement, perhaps through some combination of reducing their hours, changing priorities or declining productivity. As a result of higher net contributions, graduates will also experience higher post-retirement incomes compared with non-graduates. Moreover, they are also likely to receive this for longer due to lower mortality rates. Now having based our understanding of the HE participation on theory, we turn to discuss how factors such as individual and family background characteristics could conceivably influence HE participation. Then we review some recent empirical evidence.

2.3.3.1 Ability

Ability can be defined as natural talent or aptitude. This is thought to be a product of genetics, upbringing and learned behaviours. The literature makes a distinction between cognitive and non-cognitive ability[18]. Cognitive ability (sometimes referred to as intelligence or IQ) is thought to relate to how one processes, perceives and uses information. Non-cognitive ability refers to one's capability to motivate oneself, persevere with tasks, their trustworthiness, social competence, etc[19]. A higher cognitive ability ceteris paribus for instance will help an individual accumulate more Human Capital for each additional year of schooling. However, we do not propose that the influence of cognitive ability stops here. As higher ability individuals may also be able to more fully utilise their qualifications thereby securing higher returns. For instance, by acquiring prestigious entry-level positions in the labour market and/or also achieve faster career progression. In the following subsection we review a selection of contributions to the cognitive and then non-cognitive ability literatures.

2.3.3.1.1 Cognitive ability

Typically, authors make use of prior educational attainment to account for academic ability. However, some longitudinal studies do include tests specifically designed to capture cognitive ability, e.g. UK cohort studies (NCDS[20] and BCS70[21]). Most studies

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[18] There is a debate in the literature regarding whether we can truly view non-cognitive ability as separate and distinct from cognitive ability (see Borghans et al., 2008b). In addition to which of the two (or particularly elements of non-cognitive ability) matters more for a range of outcomes (see Duckworth & Seligman, 2005; Gagné & St Père, 2001).

[19] Gutman & Schloon (2013) argue that aspects of personality (agreeableness, conscientiousness, extroversion, neuroticism and openness to experiences) are less malleable compared with characteristics such as creativity, metacognitive strategies, motivation, perseverance, self-control, self-perceptions, social competencies, resilience and coping. Note that we discuss personality in more detail later in section 2.5.5.

[20] The NCDS began with a study of the 17,000 babies born in a week in March 1958 in England, Scotland and Wales. Follow-up surveys were then conducted when individuals were aged: 7 (1965), 11 (1969), 16 (1974), 23 (1981), 33 (1991), 42 (2000), 46 (2004), 51 (2009) and 55 (2013).

[21] Similar to the NCDS, the BCS70 is a British birth cohort study of 17,200 babies born in a week in April 1970 in England, Scotland, Wales and also Northern Ireland (although those who were born in Northern Ireland were later dropped from the sample). Full follow-up surveys were then conducted roughly every 4 to 5 years, when individuals were aged: 5 (1975); 10 (1980); 16 (1986); 26 (1996); 30 (2000); 34 (2004); 38 (2008) and 42 (2012).

in this area tend to include an individual's score directly, e.g. Blanden & Machin (2004), Blanden & Macmillian (2016), Chowdry et al. (2013), Crawford et al. (2011), Galindo-Reuda et al. (2004) and Machin & Vignoles (2004). Galindo-Rueda & Vignoles (2005) are a notable exception here by opting to use a data reduction technique - Principal Components Analysis (PCA). This essentially creates an index (or series of indices) from a group of tests which reflects commonality amongst a series of variables. However, bias may result from the influence of schooling and the problem of regression to the mean[22]. A potential solution to the contamination issue employed by some researchers (data permitting) is to create measures of ability using results of tests taken early in an individual's life, usually pre-teens. Jerrim & Vignoles (2013) address the problem of regression to the mean by using multiple test measures taken at different ages in the Millennium Cohort Study (MCS)[23] to difference out bias.

2.3.3.1.2 Non-cognitive ability

We do not directly capture non-cognitive traits in our work, nevertheless it is useful to discuss several recent contributions to this literature. This provides the reader with a sense of the current issues in the debate and serves as a base of comparison to which our later results with respect to Cultural and Social Capital can be contextualised. Here specifically we discuss the contributions by Lleras (2008) and Blanden et al. (2007) who investigate the role of a range of non-cognitive skills/traits with respect to educational attainment, future income and persistence. Both studies draw their indicators from late-childhood/early adolescence and regress on outcomes in adulthood. Lleras (2008), utilising a sample of approximately 7,500 individuals from the National Education Longitudinal Study[24] (NELS), used measures of work habits/conscientiousness (teacher reports of homework completion, hardworking and tardy), motivation (teacher rating of passive/withdrawn individual), sociability (teacher rating of relations with other students, student reports of sport, academic and fine arts participation) and politeness

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[22] The problem of regression to the mean will occur if more accurate rankings are achieved by using more than one observation from the same individual. That is assuming said observation is influenced by things like environmental factors, illness and chance. In this case a child's test score may be lower if for instance they are unwell on the day of the test.

[23] A British Birth Cohort study following approximately 19,000 children born between 2000 and 2001. To date, there have been 5 full sweeps of the data at 9 months, 3, 5, 7, 11 and 14 years. At the time of writing researchers are conducting the age 17 sweep.

[24] The NELS was designed to be a representative sample of US eighth-graders (age 13 to 14) in 1988 and contains approximately 25,000 observations. In total, four follow-up surveys were conducted; in 1990 (age 15 to 16), 1992 (age 17 to 18), 1994 (age 19 to 20) and 2000 (age 25 to 26).

(teacher rating of whether student causes disruption in class). Blanden et al. (2007), used the two British birth cohort studies, constructed measures of Rutter's (1970) internalising and externalising scales[25] and two additional matched behavioural syndromes[26] (restless and inconsequential – NCDS; hyperactive and application – BCS70). Both studies indicate that accounting for non-cognitive skills may offer a fruitful way of accounting for socioeconomic gap in educational attainment and earnings. For instance Lleras (2008) suggests that, even after controlling for cognitive ability, students who exhibited better social skills, work habits and participated in a range of extracurricular activities generally had higher educational attainment and earnings. Blanden et al. (2007) suggest that non-cognitive traits influence education attainment which, in addition to other mediating factors, explain a large proportion of income persistence across generations.

2.3.3.2 Family background

Along with ability and other individual characteristics, family background has also been found to be significantly associated with educational attainment. For instance, we know that if a child's parents have some form of HE their child is statistically more likely to participate themselves (intergenerational educational transmission). It has been proposed that better educated parents may emphasise the importance of education, hold higher aspirations for their child, exercise more parental control over their child's day-to-day activities or take other steps, i.e. provision of a dedicated study space at home. Of course, a parent's education is also likely to be correlated with their social status and family income, whilst they may also serve as an aspirational role model. Wealthier parents may also choose to provide additional educational resources, e.g. personal tuition, other educational materials and financial assistance to their children whilst studying.

Typically, the majority of studies account for background characteristics through controlling for household income, parental social status (usually father's), education (usually mother's), a single parent household indicator and residential region. Practically, these often appear in economic models as a series of dummy variables or, in the case of income, as a continuous variable. Chowdry et al. (2013) address potential

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[25] These scales were computed using principal components analysis based on maternal responses to the Rutter A scale (1970). Internalising items related to headaches, stomach aches, sleeping difficulties, worried and fearful (age 10 to 11). Externalising behaviours related to whether the child fidgets, is destructive, fights with others and disobedient (age 10 to 11).

[26] These were computed in the NCDS from teacher-based responses to the Bristol Social Adjustment Guide (Stott, 1966; 1971).

homogeneity, as household income, parental social status and education are correlated, by creating a measure of socioeconomic status utilising PCA. This has the further advantage of reducing the number of variables in the model. In the next two sections we discuss some empirical evidence on educational attainment and family background.

2.3.3.3 Empirical evidence on educational attainment

Galindo-Rueda & Vignoles (2005) investigate the determinants of educational attainment and how educational inequality has changed over a period of expansion in UK HE. The authors use two samples derived from the NCDS and the BCS70 and estimate generalised ordered logit models of educational attainment[27]. Their dependent variable consisted of five categories: no qualifications, Certificates of Secondary Education (grades 2 – 5), 1 or more Ordinary Levels (or grade 1 Certificates of Secondary Education), Advanced Levels (plus good Scholastic Aptitude test scores or the first year of college) and Degree or above (equivalent to college graduate). They proxy for cognitive ability *g*[28] by using tests taken at KS1 (age 7) or KS2 (age 11). Their model controlled for individual, background and family characteristics. Additional analyses were also presented with respect to gender, by the proportion gaining a degree in the top and bottom income quintiles. Their results indicate that an individual's cognitive ability appears to be the most important determinant of educational attainment, irrespective of cohort. The results also reveal that the association between income and attainment (holding constant ability) is significant for the highest ability quintile in the NCDS. For the BCS70, on the other hand, a significant association is also present, even at lower quintiles. This result suggests that the relative importance of the role of ability with respect to attainment has been noticeably reduced for the latter cohort, with family background characteristics exerting a larger association.

It has also been noted in the literature that by the end of primary school, less able but more advantaged children appear to overtake their brighter but less advantaged peers (Feinstein, 2003). Jerrim & Vignoles (2013) investigate this and the causal nature of education, through a simulation study, using the MCS. Demonstrating that current modelling attempts do not adequately control for the problem of regression to the mean,

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[27] Educational achievement was measured at age 33 in the NCDS (1991) and at age 30 in the BCS70 (2000).

[28] The author's ability index *g* is based on that of Cawley et al. (1996) and is conducted using PCA (a data reduction technique which creates indices based on the communal variance evident between a group of input variables) on a set of test scores.

leading to non-robust policy recommendations. To remedy this, the authors propose and apply a new methodological approach. Their method utilises test score data observed at key points from birth to 10 years of age to control for bias. They first rank individuals by ability based on their initial test score, and then control for change using the results of a second test then at a later age. Mathematically, they show that, by using their proposed methodology, any ranking errors should be completely accounted for by the difference between the first and second test. The authors then classify the MCS participants into five categories ranging from 'very advanced' to 'very delayed' in accordance with test scores[29] at age 3. Children within these ability categories are then grouped by socioeconomic status (quartiles of household income). Differences in test scores achieved at age 3 and later results at ages 5 and 7 are examined. The findings challenge the established orthodoxy by revealing the presence of a socioeconomic gap in attainment from a very early age and that development trajectories remain roughly parallel between groups. This implies that policymakers should focus their efforts primarily on early year's education in order to address the socioeconomic gap in attainment which emerges by age 5.

Other studies have also explored links between a parent's socioeconomic position and child outcomes. Crawford et al. (2011) explores this by focusing on the intergenerational transmission of cognitive skills. The authors use a restricted sample of BCS70 cohort members with children[30] to estimate a series of Ordinary Least Squares (OLS) regressions on various child (as detailed in the age 34 sweep of the BCS70). Their regressions included clustered robust standard errors for family, regressed on age-adjusted[31] average BCS70 cohort member's child (percentile ranked) cognitive test scores. The study's findings suggest that parental cognitive ability is indeed a significant predictor which helps explain some of the association between parental socioeconomic position and child test scores. Specifically, incorporating these additional measures reduces the unexplained component of the socioeconomic gap from 16ppts to 6ppts. Although a number of mechanisms could explain this phenomenon, the findings may allude to the genetic transmission of parental ability.

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[29] Bracken School Readiness Assessment examines concepts parents and teachers have taught to children in preparation for school entry. The test was developed by Bracken in 2002 and first published in the Psychological Corporation, Pearson.

[30] In the age 34 sweep, approximately half of the cohort were surveyed to ascertain information on their children and child-raising activities.

[31] It is likely that child test scores will exhibit a degree of causality between variables and across generations. Employing a standard age-normalisation process would not completely normalise test scores, hence the authors adopt a two-step age-normalisation procedure.

2.3.3.4 Empirical evidence on family background and socioeconomic gap

Evidence from the mid-2000s points to a widening socioeconomic gap in HE participation. This implies that over the recent period of expansion in HE the expansion has benefited those children from more affluent backgrounds. For instance, Machin & Vignoles (2004) utilise three cohorts of data, the NCDS, BCS70 and a pseudo-cohort from the British Household Panel Study (BHPS)[32] to investigate how the relationship between family background and HE has changed. They begin by presenting rates of degree acquisition at age 23 by parental income across the three cohorts. The authors choose to focus on income-based measures of inequality here, as opposed to social class, as significant changes to the latter have occurred between the cohorts. They present a table containing a cross tabulation of high and low cognitive ability groups with family income which indicates, as expected, that the expansion appears to have benefited those children from affluent backgrounds as opposed to those with higher cognitive ability. Having established this, the authors proceed to consider changes in intergenerational mobility over time. As this may have reduced given that children from more affluent families are more likely to participate ceteris paribus. To do this the authors regress parent's income and other individual, parent and family background controls on the natural logarithm of their child's future income. Their approach here draws heavily on Blanden et al. (2002)[33]. The pattern of results shows that as expected intergenerational mobility has fallen even after allowing for greater income inequality in the BCS70 cohort. The authors also rule out higher measurement error in the NCDS, which could account for the reduction. Additionally, the authors employ a quartile transition matrix approach and find a similar pattern, i.e. that intergenerational mobility has fallen. The authors conclude that, over this period of increased participation in HE, individuals from more affluent backgrounds appear to have benefited disproportionally from the expansion in terms of their participation in HE. In addition, parental income became a more important indicator of future labour market success.

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[32] BHPS began in 1991 with a sample of 5,500 households (approximately 10,300 individuals). In 2009 the BHPS was integrated with a new longitudinal study named 'Understanding Society'. Specifically, the authors derive four cohorts of 16 year olds included within the BHPS 1992 to 1995. This was done in order to provide an inference on participation in post compulsory education and attainment in the late 1990s to early 2000s. Individuals are only included if they participated within the BHPS eight times.

[33] At the time, this had not yet been published and was forthcoming. This book was subsequently published in 2004 and is referred to in the bibliography as Blanden et al. (2004).

Galindo-Rueda et al. (2004) explore the emergence of the socioeconomic gap with respect to UK HE participation and its determinants. Their analysis utilises two main sources of data: an individual's Higher Education Statistics Agency (HESA) entry[34] and Youth Cohort Study 1985[35] (YCS) data. The former is used to conduct a postcode-level (aggregate analysis) on the number of English and Welsh full-time students aged between 18 and 24 who are participating in a first degree course between 1995 and 2001. The latter analyses the determinants (microeconomic analysis) of HE using two cohorts, 1996 and 2000, derived from the YCS. The results reveal that, more populated postcodes have higher rates of aggregate HE participation, whilst also confirming that participation appears to have risen faster in more affluent postcodes over the period (particularly in the early and mid-1990s). Micro analysis of the determinants of HE initially suggests that the socioeconomic gap in HE participation reduces significantly once controls for prior educational attainment are included. However, when finer measures of educational attainment are used instead, social class associations become insignificant. This suggests that much of the socioeconomic gap occurs long-before the actual point of participation in HE.

Blanden & Gregg (2004) explore the relationship between household income and outcomes using a variety of empirical approaches[36]. The authors begin by estimating how the importance of household income has changed over successive cohorts with respect to highest qualification obtained using the NCDS, BCS70 and the BHPS. Next, they examine how income variation and ability affects the highest educational qualification obtained and participation in post-compulsory education separately, using the BCS70 only. The authors then examine how the pattern of results change by controlling for sibling fixed effects[37] using the BHPS, whilst also examining the effect of controlling for a measure of permanent income on highest qualification and staying

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[34] As the HESA data did not contain information on family income, HESA entries were linked to commercial Consolidated Analysis Centres International Inc. paycheck household data. This provides the authors with an estimate of the income distribution for each household. The data does not however, contain population estimates of the target population. Census (2001) data was utilised for this purpose.

[35] Administered by the DfE, the survey began in 1985 and is designed to enable researchers to assess post-compulsory educational transitions. To date, there are 13 cohorts with individuals surveyed at age 16 and annual follow-ups for a period of two years.

[36] These approaches relate to experimental trials of policy interventions (US Welfare-to-Work, Moving to Opportunity and UK Educational Maintenance Allowance programmes), sibling studies (pseudo sibling-fixed effects model) and post-educational income (eliminate bias by differencing out the impact of transitory income using later additional measures of income, leaving only measurement error).

[37] Fixed effect regression controls for unobserved heterogeneity by assuming any differences are time invariant.

on rates. The results reveal that the income-attainment relationship has strengthened considerably over the respective cohorts and BHPS data. The results also suggest that household income does appear to exhibit a causal impact on educational outcomes.

Blanden & Machin (2004) investigate whether UK HE expansion 1970s to 2000s has been associated with rising educational inequality. The authors utilise a sample of individuals from three cohorts attending university in the 1970s, late 1980s and 2000s. These samples were derived from the NCDS, BCS70 and the BHPS. Their initial descriptive analysis indicates that throughout this period of HE expansion, the participation gap has increased. Given the importance of this finding, the authors then test its robustness by using three alternative specifications to model and test for the existence and changes in various measures of educational participation and income inequality. Their results suggest that there exists an income-attainment association at all levels of educational attainment, which is robust to different specifications of income, attainment and measurement error. They also observe that the association between income and degree attainment are steeper for both the BCS70 and BHPS than the NCDS, suggesting that income falls in importance once a specific threshold is reached for the latter cohorts. These results imply that HE expansion has disproportionately benefited children from higher income backgrounds and has acted to widen the gap in HE participation by social status.

In a later paper Blanden & Machin (2013) update their analysis in Blanden & Machin (2004) by adding an additional BHPS 2005 pseudo cohort. This provided measures of educational inequality both within and between cohorts (previously this was limited to 1999) with respect to degree acquisition rates by age 23. Recall that in their analysis educational inequality is calculated as acquisition rates of the top 20% minus those from the bottom 20% of children by parental income. This update revealed that educational inequality appears to have fallen slightly between the BHPS 1999 and 2005 pseudo cohorts from 37ppts to 34ppts. Incidentally acquisition rates were up by 1ppts (to 10%) for the lowest quintile and down 2ppts (to 44%) for the highest quintile. Nevertheless, it is important to note that this reduction is on the back of an increasing trend from both 1981 to 1993 of 15ppts and 1993 to 1999 of 7ppts. As such the authors argue that despite the improvement in education inequality of 3ppts between 1999 and 2005, this update reaffirms the educational inequality remains high for young people in the UK.

Chowdry et al. (2013) investigate differences in HE participation and quality of institution attended. To conduct the analysis, the authors utilise data on two cohorts of HE entrants 2004/05 and 2006/07 (between the ages of 11 to 20) which were derived from a large UK national linked administrative dataset[38]. To classify whether an institution is high-quality or not, the authors create a dummy variable which indicates whether a particular university's Research Assessment Exercise (RAE)[39] score exceeds that of the lowest Russell group member in 2001. In a new development the authors construct their index of socioeconomic status, utilising PCA, based on: eligibility for Free School Meals (FSM) at age 16, Index of Multiple Deprivation (IMD) score, residential neighbourhood type and three local area-based measures from the 2001 Census linked via the participants' postal codes. The authors utilise the LSYPE[40] to conduct a robustness check for their measure of socioeconomic status. The results reveal a substantial difference in raw HE participation rates by gender (lowest socioeconomic status are 40.2% and 44.3% less likely to participate in HE compared to the highest), and the quality of HEI attended by socioeconomic status (lowest socioeconomic status are 31.2% and 31.9% less likely to attend a prestigious institution compared to the highest). This suggests that those individuals with a higher socioeconomic status not only have greater rates of HE participation but also have a higher likelihood of attending more prestigious institutions. However, once previous attainment is controlled for, the HE participation gap by socioeconomic status is substantially reduced but does remain statistically significant. Excluding school fixed effects results in a significantly increased socioeconomic gap (40% approx.) for both boys and girls, suggesting that schools have an important role to play.

Blanden & Macmillan (2016) conduct a more recent study which assesses educational inequality, expansion in UK HE and intergenerational mobility over the past four decades. In order to assess educational inequality, the authors pool data from various

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[38] The data is based on the English NPD, which has been linked to the National Information System for Vocational Qualifications and individual records derived from HESA data.

[39] To categorise institutional quality, the authors use each institution's RAE. RAE (formally known as Research Selectivity Exercise) is conducted by the University Grants Committee (now by the various UK Higher Education Councils) and accesses and ranks the quality of research output from each institution. Previous RAEs took place in 1986, 1989, 1992, 1996, 2001 and 2008. This has since been renamed the Research Excellence Framework, the first of which was carried out in 2014.

[40] The LSYPE04 began with a survey of 15,500 young persons aged between 13 and 14 in 2003/04. Follow-up surveys were then conducted annually until 2009/10. The participants were subsequently linked to their entries in the NPD. For more details on the LSYPE and its design please refer to section 4.3.1.

cohorts NCDS, BCS70, BHPS (multiple), National Pupil Database (NPD) [41], HESA, LSYPE and ALSPAC. The authors then assess the raw difference between achievement rates of expected and higher levels of attainment at different stages (KS2, KS4 to KS7 data permitting) by family background (bottom and top socioeconomic status quintile – usually parental income but FSM in NPD). In the second part of the analysis the authors add a variable relating to the proportion of a cohort expected to achieve a certain level of attainment, whilst also adopting a flexible functional form to allow for tipping points. This is important because raising educational attainment beyond a certain level may reduce income inequality as improvements in attainment for less well-off will continue to improve; whilst those from better-off backgrounds may plateau (Boudon, 1974; Coleman, 1966). In the third and final part of their analysis the authors assess the impact a higher supply of graduates has had on the graduate earnings premium. This is important because a reduction in the premium may reduce the pay disparity by socioeconomic status. To do this the authors pool quarterly data from the Labour Forces Survey 2004 to 2010, specifically regressing log hourly pay on academic qualifications, survey year and other background controls. The results indicate a mixed pattern of educational inequality. Whilst it appears that educational attainment from the least well-off backgrounds has risen, no equivalent association was found at higher levels of attainment. Relative educational differences would therefore appear to matter more than absolute differences. Furthermore, the results in relation to returns, reveal that these have remained roughly constant or marginally increased through the various educational levels. The authors conclude by stating that, despite there being evidence of some narrowing of the gap in educational attainment by family background at lower benchmarks, there is no evidence of this narrowing at higher levels.

Thus far we have shown that there exists a socioeconomic gap with respect to both participation in HE and earnings after graduation. It seems plausible that such a gap also exists with respect to university dropout rates. Powdthavee & Vignoles (2009) investigate the instance of university dropout (both voluntary/involuntary) with respect to socioeconomic status and prior educational attainment. They utilise another linked administrative dataset, containing information from the NPD, Pupil Level Annual School Census[42] (PLASC) and HESA. This linkage provided the authors with a single longitudinal cohort with data on individuals from age 11 (1997/1998) to HE participation

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[41] This contains detailed information on pupils attending schools and colleges in England. The NPD is administered by the DfE.

[42] Renamed the School Census, the PLASC is an annual statutory census return with respect to all maintained schools in England which is also administered by the DfE.

at 18 (2004/05) and continuation at 19 (2005/06). Test score and prior educational attainment data were collected when individuals were aged 11, 14, 16 (General Certificates of Secondary Education - GCSEs) and 18 (Advanced Levels - A-Levels). Parental occupational classification, i.e. social status, is used to control for socioeconomic status. The authors estimate a probit model to predict individual rates of non-continuation, comparing and contrasting a set of controls for socioeconomic background and personal characteristics, prior attainment, HE characteristics and institutional dummies. From the results, it is clear that more 'advantaged' students are less likely to dropout of university after the first year. Students whose parents work in occupations such as sales or customer services, for example, are 3ppts more likely to dropout than students whose parents are managers or senior officials. This difference is large, given that rates of dropout in the sample is 6%. Ethnic minority students also appear to be significantly less likely to dropout by a similar degree. However, controlling for prior academic attainment (particularly at 16 and 18), accounts for approximately half the raw socioeconomic gap[43]. This would seem to suggest that the main mechanism driving dropout are likely to be lower rates of academic preparedness.

Quinn (2011) reflects on the higher dropout rate amongst working class students as part of a larger ESRC funded project "New perspectives on education and culture". Specifically the author hosts research jury days (seminars with local stakeholders) in two locations, one in England and the other in Scotland, to explore working class UK HE dropout. The author notes that non-academic reasons appear to play a large part in determining whether an individual drops out from HE or not. For instance, working class students may resign themselves to failure (feelings of hopelessness) or have a lack the confidence to succeed, in so doing creating a self-fulfilling prophecy and subsequently dropping out from HE. Other limiting factors may include: families unwittingly placing excessive pressure on a HE participant, concern over mounting student debt and the necessity of having to hold down a part-time job to finance their study.

To summarise the findings from the previous two subsections, cognitive ability would appear to be the largest determinant of an individual's educational attainment. This is reassuring, as we would expect in a meritocracy that ability should be the main determinant of progression to HE. However, more recent evidence has suggested that there has been a faster rise in educational attainment amongst those who come from

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[43] The authors also explore implications on dropout of subject studied and institution attended, although neither appeared to substantively alter the pattern of results.

higher socioeconomic backgrounds, widening the socioeconomic gap. This suggests that family background characteristics, such as household income, have become an increasingly important determinant over time. Indeed, a recent report by HEFCE (2015) states that, despite an improving trend with respect to fair access, the probability of a student participating in HE, who originates from the least advantaged area, is 20%. On the other hand, those from the most advantaged areas, are three times more likely to participate (HEFCE, 2015, p.16). This socioeconomic gap has also been shown to extend to type of institution attended and likelihood of dropping out. For instance, disadvantaged individuals are correspondingly more likely to attend less prestigious universities, whilst also have a higher incidence of dropping out. However, this gap (albeit reduced), remains even after differences in prior attainment are controlled for, which suggests either that other unobserved factors may be affecting HE participation, or current ways of classifying an individual's background are ineffective.

To conclude, these findings inform on the debate surrounding the transition from aggregate to wider participation in HE. From surveying the aforementioned studies, it also become apparent that research has almost exclusively focused on investigating the impact of ability and family background (Economic Capital), leaving cultural and social influences unexplored. Our working hypothesis is that incorporating these influences into empirical models will improve our understanding of the HE participation decision and so the socioeconomic gap. Before we present our arguments, we outline the available evidence on returns to education.

2.4 Returns to Higher Education

Given the context of increasing participation in HE, we now explore how returns to HE have changed over time. Specifically, we summarise the literature surrounding private pecuniary, non-pecuniary (money and non-money to the individual) and social returns. Private pecuniary returns come in the form of higher wages as a result of undertaking more skilled work, whereas non-pecuniary benefits are any other gain attributed to the individual such as improved job satisfaction, health outcomes, etc. On the other hand, benefits also accrue to society, e.g. reduced criminality, higher rates of innovation and a more productive workforce.

2.4.1 Private pecuniary returns to Higher Education

Obtaining an undergraduate degree is often touted as a good investment. For instance, UUK (2007) states that over a working lifetime (compared to an individual with two or more A-Levels) the additional pecuniary return to an undergraduate degree is worth more than £160,000 (representing a difference of 20% to 25% between the two groups) with additional benefits attributable to post-graduate study. A more recent estimate by the Department for Business, Innovation & Skills (BIS) places the lifetime value of the earnings premium for a first degree at £168,000 for men and £252,000 for women (BIS, 2013, p.5). Alternatively, the OECD (2017) calculated that on average, across all OECD countries[44] with data, the net private financial return of attaining tertiary education amounts to US $252,100 and $167,400 for a man and woman respectively[45]. Whilst there is typically a gender gap, men receive higher returns than women in all countries except Estonia and Spain. Moreover, the return to tertiary education, as opposed to upper secondary, across the OECD is approximately 56%. These figures imply that, in order to reap the higher rewards available in the labour markets, individuals must participate in some form of tertiary education.

More formally, Mincer (1974) modelled the impact of training on earnings. The empirical specification is given by Eq. (8). The generalised specification models current earnings as a function of schooling and experience:

$$\ln(Y_1) = \ln(Y_0) + r(S) + \beta_1(X) + \beta_2(X^2) \qquad \textbf{(8)}$$

Where S is years of schooling, X is labour market experience, $\ln(Y_0)$ and $\ln(Y_1)$ is the natural logarithm of pre- and post-training earnings. Estimating returns to education in this way is however, intrinsically difficult as we cannot simultaneously observe an individual's labour market returns over their lifecycle, both with and without participating in additional education or training. Moreover, attempts to estimate returns

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[44] At the time of writing there are currently 36 OECD member countries, these include: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, UK and US. Lithuania likely joined after these results were obtained.

[45] Psacharopoulos & Patrinos (2004) also discuss returns by educational level, sector and per capita income across countries, noting that a research gap exists between micro- and macro-economic measures of evidence on returns.

using OLS are often confounded by omitted variable, measurement error, simultaneity bias and reverse causality.

A basic approach to returns compares current wages of individuals with HE against those with A-Levels or equivalent. In this case controlling for individual and family background characteristics is likely to be flawed, as inherent differences (even amongst similarly qualified individuals such as family upbringing and ability) may remain. This approach may also suffer from measurement error if individuals are asked to recall their educational attainment many years post event. Moreover, simultaneity bias may occur if one or more explanatory variables are jointly determined with the dependent variables. Lastly, although OLS informs on the association between groups of variables, it does not prove a causal relationship. Researchers may then mistakenly infer that an explanatory variable has a causal relationship on the dependent variable when in fact this may not be the case.

To resolve these issues researchers have employed a variety of approaches and methods. Conducting analysis on twins is one avenue as this is believed to result in near perfect matching by regressing returns on within-pair differences in educational attainment. The assumption here is that within-twin pair's family background is identical. Moreover, it is also assumed that as a result of genetic similarity, particularly amongst monozygotic twins[46], ability and other non-learned characteristics are more equal. The use of twin data, does have some drawbacks as there are fewer viable secondary data sources, whilst sample sizes are smaller given the birth prevalence of twins. Alternatively, natural experiments (such as the 1972 increase in the compulsory school leaving age from 15 to 16) can also be used with a variety of techniques[47]. More commonly returns are estimated using fixed effects or Instrumental Variables (IV) [48] analysis utilizing longitudinal or panel studies.

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[46] Monozygotic twins, known more colloquially as identical twins, result from a single embryo splitting shortly after conception. As both twins result from the fusion of the same two gametes, monozygotic twins are almost genetically identical. Dizygotic twins, on the other hand, result from the release and subsequent fertilisation of two distinct sets of gametes.

[47] Leigh & Ryan (2008) give a good summary of the differences by comparing and contrasting estimates of returns from a variety of natural experiment techniques.

[48] IV analysis is a more complicated empirical technique but helps overcome omitted variable bias, measurement error, simultaneity and reverse causality. Put simply the researcher uses an instrument to estimate returns to education. However, the choice of instrument is crucial and must satisfy two conditions: first, the instrument cannot be too weak that the first stage does not exist (a variant of two-part regression); second, the instrument should not be correlated with any other determinant of returns. However, the second condition cannot be formally tested and is often the subject of much debate.

A related issue has also emerged with respect to tracing returns over time, given the expansion in HE which has increased the supply of graduate labour. If demand for graduate labour has not risen to match the increase in supply, returns may have fallen overtime. One side-effect of this may be a wider wage distribution amongst graduates and/or an increase in the number of graduates who are deemed to be over-educated. In the former case, quantile analysis has been used to assess the degree of ‘fanning out’ in the wage distribution. However, the inclusion of additional cohorts creates a need for further controls for year and economic activity within returns models. In the latter case, there has been considerable growth in the number of jobs requiring prospective applicants to have a degree or equivalent qualification. This has led to some questioning whether a single definition of a graduate job, employed in a role that required a degree as a prerequisite in order to apply, is suitable. As such, researchers have begun experimenting with subtly different definitions of graduate employment. Moreover, Harmon et al. (2003) conducts an excellent and comprehensive review of the returns to education literature (early 2000s and earlier). Concluding that returns to education are positive and large relative to other types of investment. We now assess some more recent contributions to the returns and over-education literature.

Blundell et al. (2000) estimate the influence of obtaining a degree or higher qualification on earnings at age 33 in the UK using a sample of approximately 2,500 individuals derived from the NCDS. To explore the impact of obtaining a degree on earnings, the authors employ a simplified version of Heckman et al. (1997, 1998) matching participants in HE with similar individuals possessing at least one A-level. Employing this procedure enables the authors to more fully attribute increases in returns to differences in educational attainment between individuals. A series of wage equations were then estimated using OLS on logged real hourly wages with staggered controls for ability at ages 7 and 16, individual socioeconomic, educational and employment characteristics. The key result indicates that male and female graduates earn hourly wages 17 and 37 percent higher than a similarly-qualified individual who has at least one A-Level but did not participate in HE.

Walker & Zhu (2008) investigate the impact of the educational expansion with respect to the UK on the graduate wage distribution. The authors utilise a series of cross-sectional cohorts of graduates 1994 to 2006 between the ages of 25 and 37 sourced from the UK Labour Force Survey[49] (LFS). The final sample consisted of approximately 22,000 graduates and 5,500 non-graduates. The authors first conduct difference-in-differences analysis on log wages to capture changes in the wage premia across cohorts. In essence, this analysis mimics an experimental design, allowing researchers to assess changes between control and treatment groups. The authors then explore changes in the conditional wage distribution through quintile analysis, which enables comparisons of the factors affecting individuals in a specific segment of the wage distribution. Control variables in both analyses include dummies for cohort, ethnicity, vocational qualifications, age and degree-age interactions. The analysis suggests that, despite the large increase in participation in HE, the graduate wage premia for men has remained stable, whereas for women the results suggest a modest but weakly significant increase. The results from the quintile regressions reveal a large increase in the graduate wage premia for men and women in the top quartiles of the conditional distribution. This is accompanied by a fall in the graduate wage premia for men at the bottom of the conditional wage distribution. For women, this was positive but not statistically significant. The authors propose that the growth in HE participation has arisen through higher participation of those individuals with lower unobserved skills, e.g. interpersonal skills and other soft skills. This explanation is also likely to account for changes at the bottom of the conditional wage distribution if employers value these skills.

Bonjour et al. (2003) estimate the returns to schooling using a UK twin study. Specifically, 682 female-only pairs[50] sourced from St. Thomas' UK Adult Twin Registry[51]. The relatively large sample enables sufficient within-pair variation to clarify potential measurement error. Their earnings equations are based on Mincer (1974) equation but additionally control for residence in London/South East, married, work tenure and working part-time. The difference in reported education of a twin is also instrumented based on the report by the other. To accompany these estimates, the authors provide a baseline by using a pooled OLS regression based on the UK LFS. The results suggest that the effects of measurement error (downward bias) and omitted ability (upward bias) approximately cancel each other out, resulting in an estimated private return to women in the order of 7.7 percent (Bonjour et al., 2003, p.1804).

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[49] The UK LFS is a large UK household survey which collects data on the employment circumstances of the UK population.

[50] The use of female-only twin pairs is likely to compound the analysis, as women are more likely to experience gaps in their work experience history in order to raise a family.

[51] The registry began in 1993 and currently contains information on over 10,000 monozygotic and dizygotic Caucasian twins between the ages of 18 to 80 across the UK.

Sandewall et al. (2014) however, cast doubt on whether twin studies do result in unbiased estimates of returns to education, arguing that twin studies essentially rely upon factors unrelated to wage-earning ability to explain within-pair variation in schooling (equal-ability assumption). To conduct their analysis, the authors make use of a relatively large Swedish linked administrative dataset[52] containing information on 890 pairs of male monozygotic twins. The authors estimate the returns to schooling with and without a measure of cognitive ability, by employing fixed effects regression and IV techniques. Both these methods correct for omitted variables bias, whereas IV also has the benefit of correcting for measurement error and simultaneity assuming there is a high quality instrument. Three main findings emerge from the results of this study: first, the authors find that even after accounting for schooling, within-pair differences in schooling are in fact strongly associated with income; second, the results also reveal that within-pair differences in schooling are significantly affected by difference in Intelligence Quotient (IQ); lastly, and most importantly, introducing IQ differences within pair to paired wage equations reduces returns to schooling by approximately 15%. Alternatively, using birth weight as a proxy for ability also yields substantively similar findings. The authors conclude that despite this, the co-twin method should not be abandoned as it offers a greater degree of precision with respect to estimating returns. However, as the ability bias is positive, within-pair estimates should be regarded as an upper bound of the true returns.

Now having assessed the ways in which researchers have tried to control for bias with respect to estimating returns. We now move on to assess the determinants of over-education as this will provide some detail on how returns are stratified amongst graduates. Battu et al. (1999), for instance, utilises survey data from two cohorts of graduate leavers[53] (1985, 1990) attending various HEIs collected at 1 and 6 years post-graduation to assess the determinants. The survey asked participants to self-assess whether the degree gained was a requirement of their main employment to examine the determinants on the incidence of over-education over the participant's career path. The authors estimate a probit model which includes controls for degree characteristics, educational background, current job characteristics, attitudes and personal

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[52] The large Swedish administrative dataset used consists of the Swedish Twin Registry linked with administrative data sourced from Statistics Sweden and national service enlistment records. The Swedish Twin Registry contains information on approximately 85,000 monozygotic and dizygotic twin pairs.

[53] The graduate leavers' survey was organised by the University of Birmingham and administered to students attending various HEIs at dated intervals 1986, 1991 and 1996.

characteristics. The results suggest that females are more likely to experience over-education initially, but rates converge to that of males 5 years post-graduation with the percentage of males remaining stable. Degree subject studied, being a mature student, part-time study, occupational classification, mobility and firm size all matter. The authors do, however, note significant rates of both entry to and exit from graduate work over respective careers. Cyclical patterns also appear to temporarily impact upon initial-take up rates of graduates by employers as the percentages of over-educated graduates is higher in the 1985 cohort, compared to the later 1990 cohort.

A later study by Dolton & Silles (2008), which also estimate the determinants of over-education on a post-graduate destinations survey of alumni in 1998[54], finds roughly similar proportions (40% to 50%) to Battu et al. (1999) of over-educated graduates in their first job. Unlike Battu et al. (1999), Dolton & Silles (2008) include a second measure of over-education for robustness. They ask what qualifications were required in order to apply for their first job and what qualifications were actually required to do that job. Empirically, the authors use OLS to estimate the influence of a similar set of explanatory variables on the incidence of over-education between the various measures for their past and current job. They reach similar conclusions to that of Battu et al. (1999) but do report some differences. For instance, occupational sector, size of firm, occupational mobility and year of graduation matter more for first job than for current job, whereas subject studied appears to matter more for current job than for first job.

Chevalier & Lindley (2009) assess the changing influences of being overeducated with respect to a period of UK HE expansion. The authors use survey responses from two cohorts of graduates (pre- and post- HE expansion) across multiple institutions[55]. Interestingly, the authors divide graduates into the ‘apparently over-educated’ and the ‘genuinely over-educated’. The first group includes those who are not in traditional graduate occupations but are satisfied by the match between their education and job requirements. Whereas the second group is distinguished by those not in graduate occupations and who are also not satisfied. Using these measures of over-education, the authors report that between the two cohorts the percentage who are over-educated has roughly doubled to 35%. In contrast, though, an alternative measure ‘whether a degree was required to obtain the job’ suggests the percentage remained stable at 30%. The

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[54] The alumni survey was administered to University of Newcastle Alumni of graduates and postgraduates.

[55] Data was sourced from responses to a survey of graduates conducted by the Institute of Employment Research, University of Warwick.

authors estimate a multinomial logit to explore the role of a similar set of explanatory variables to Battu et al. (1999) and Dolton & Silles (2008) but include a greater range of indicators which relate specifically to graduate skills. The results suggest that the determinants of over-education between the two cohorts have remained roughly similar. Although, the results do hint at employers becoming more selective in recruitment and placing greater emphasis on soft skills.

In later work, Green & Zhu (2010) seek to explain trends in over-qualification[56] pre- and post- HE expansion in the UK. To conduct their analysis, the authors make use of multiple data sources[57]. In order to determine the incidence of being over-qualified, the authors follow Chevalier & Lindley (2009) by distinguishing between different types of over-education, e.g. 'real' and 'formal'. However, their measure of formal over-qualification relies on reported skill utilisation, as opposed to self-reported job satisfaction. To conduct the analysis, Green & Zhu (2010) utilise quantile regression by gender on the natural logarithm of hourly pay, degree, employment characteristics and prior educational background. A similar analysis is also repeated with respect to the association between over-qualification and job satisfaction. Consistent with other studies the authors report that returns have remained stable for those at the median, rising slightly at the top, but falling substantially for those at the bottom of the conditional wage distribution. Unlike other studies, their results provide evidence that the pay penalty has increased for those graduates who fall into the 'real' over-educated category. Although both types of over-qualification have risen over time, the authors find that 'real', as opposed to 'formal', over-qualification is also associated with job dissatisfaction. Moreover, the authors argue that the State should provide (as part of its statistical remit) annual information on the distribution of returns to private education, to facilitate better labour market matching.

To summarise, we have discussed some issues with estimating returns and what approaches and methods researchers have employed in order to resolve them. Estimating returns to HE is problematic because we cannot simultaneously observe earnings had the person both participated and not participate in HE. Authors have utilised a variety of

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[56] As opposed to being over educated, which can be defined as a graduate not being in a graduate job. Over qualification is defined more generally as being educated or skilled beyond what is required to do the job.

[57] Data Sources: Employment in Britain (1992), UK Skills Surveys (1997, 2001 and 2006) and Quarterly UK LFS. Employment in Britain (1992) consists of a survey of the British labour market, sampling those employed (distinguishing by those self-employed) and unemployed. The survey was sponsored by the Employment Department and Leverhulme Trust.

methods to address this. However, each method has its problems. We also outlined some point estimates or returns to HE, generally finding that the graduate earnings premium is between 7% and 15%. Evidence also suggests that there has been a substantive increase in the percentage of the working population holding graduate-level qualifications, whereas the percentage of over-educated workers and the graduate wage premium appears to have remained roughly constant. This would imply that demand for graduate labour has kept pace with supply. However, this masks some deeper changes in the wage premia, particularly with respect to non-traditional HE entrants and their likelihood of being over-educated. As we also discussed evidence which indicated that there has been significant dispersion in the returns from the conditional earnings distribution.

2.4.2 Non-pecuniary returns to Higher Education

We now turn our attention to the nature and extent of non-pecuniary private benefits attributable to education. It is important to point out that, owing to the difficulty in quantifying non-pecuniary benefits, the literature assessing this is less broad. Nevertheless, we review a series of international studies relating to job-satisfaction, quality of life, marriage, fertility, health, smoking intensity, the consumption value of education and educational intergenerational transmission.

Two of the studies discussed in the previous sub-section, Battu et al. (1999) and Green & Zhu (2010) touched upon one of the non-pecuniary returns, namely job satisfaction. Battu et al. (1999) estimate the added job-satisfaction from a graduate qualification using an ordered probit model by regressing job-satisfaction on a series of employment and job characteristics. They found that being employed in a graduate occupation (either currently or in the past) has a significantly positive association with current job-satisfaction. Similarly, Green & Zhu (2010) report greater rates of job dis-satisfaction amongst the genuinely over-educated group.

Powdthavee et al. (2015) contributes to this literature by investigating the role of education on quality of life. To conduct the analysis, the authors utilise a sample of households originating from the nationally representative Australian Household, Income and Labour Dynamics Survey[58]. The authors conduct multiple mediation analyses, via

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[58] The Australian Household, Income and Labour Dynamics Survey is a panel study which began in 2001 with 7,682 households. Collecting information on labour market, family dynamics and well-being.

Structural Equation Modelling (SEM), on five variables related to life satisfaction, e.g. employment, income, health, marriage and children. Employing mediation analysis helps to identify the mechanism underlying the observed relationship between two variables. Furthermore, the authors also explore whether gender has an impact and that this indirect association is temporally consistent. The authors conclude that the net effect of education on life satisfaction is positive. This however disguises contrasting associations, with education having a negative direct effect on life satisfaction, which is more than compensated for by the larger cumulative and positive indirect effects (particularly on income and health). Moreover, these relationships appear fairly stable across time, although some differences are observable between the genders.

Anderberg & Zhu (2014) utilise a natural experiment, the UK Easter leaver rule[59], to investigate the association between educational attainment and women's marital outcomes in the UK. The analysis was conducted on a large pooled sample of UK women derived from the LFS. Women were included in the sample if they featured in the LFS returns 1984 to 2006, were aged 18 or over at the time of interview and born in England or Wales between September 1957 and August 1971. The authors present a number of IV specifications with respect to the probability of acquiring a specific level of educational attainment and characteristics of their spouse. The results suggest that women born from February onwards in the academic year (required to stay on) were some 3.5% more likely to gain academic qualifications. Importantly women were not any more likely to be married, although typically married later in life. However, they were more likely to marry similarly qualified partners, who were themselves more likely to be economically active.

Cygan-Rehm & Maeder (2013) contribute to the debate with respect to the non-pecuniary returns by investigating the role of education on fertility rates in Germany. Earlier findings in this area appear to be mixed and vary across countries. The authors do however make a case that Germany can be considered somewhat of a special case, given the offsetting effects from the cultural and institutional environment. Namely, the existence of a relatively inflexible labour market, high wage penalties for motherhood and limited supply of public childcare. To conduct their analysis, the authors use a linked-sample of women born between 1937 and 61 drawn from two complementary

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[59] In England and Wales, children born between 1976 and 1997 could leave school at the start of the spring term (following Easter) provided they were 16 and born between 1st September and 31st January.

data sources: the German Mikrozensus[60] and the German Socio-Economic Panel[61]. To control for potential issues of endogeniety in schooling, the authors apply an IV approach utilising the staggered application of an increase in mandatory schooling from 8 to 9 years amongst West German states. The results suggest that a one year increase in compulsory education permanently reduces fertility, whilst increasing the likelihood of childlessness by 2ppts to 5ppts. This amounts to a reduction 0.1 live births per woman. The results also appear to be consistent with the opportunity cost hypothesis, namely that the compulsory schooling reform affected women's occupational preferences by increasing the opportunity costs of child-bearing.

Silles (2009) investigates the causal mechanism between education and health by utilising changes in compulsory schooling laws in the UK (from 14 to 15 in 1947 and to 16 in 1973). The author tests whether education has a causal relationship with health or whether omitted variables negate causation. To conduct the analysis, Silles (2009) utilises a sample from the General Household Survey[62] (GHS) for England, Scotland and Wales. The author's results with respect to health strongly reject the exogeneity of schooling. These results are robust to Regression Discontinuity Analysis and reject the author's hypothesis that causality is spurious through omitted covariates. Indeed, the causal estimates for years of schooling on health outcomes are also noticeably larger than standard regression estimates, indicating these are significantly downwardly biased. The author attributes this result to survey measurement error. Specifically, her Two-Stage Least Squares estimates imply that an additional year of education raises the probability of a GHS participant reporting good health by 4.5 to 5.5 percent[63]. Some tentative evidence is also presented suggesting that returns to health are larger at lower levels of education.

It is also suspected that education may reduce both the incidence and frequency of health damaging behaviours. Bratti & Miranda (2010) investigate smoking incidence and

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[60] Annual (exc. 1975, 1983 and 1984) nationally representative household panel data set organised by the Federal Statistical Office which surveyed one percent of German households.

[61] Annual panel study of approximately 11,000 private households conducted by the German Institute of Economic Research.

[62] The GHS71 is a continuous wide-ranging study of private households conducted by the Office for National Statistics.

[63] Lleras-Muney (2005) established a causal link between education and health after utilising changes in compulsory schooling laws 1915-1939 in the US. Specifically, the authors construct synthetic cohorts using successive US census' data. Moreover, they also find a direct effect between education and adult mortality. This is important because improvements in health do not fully account for their finding. We also direct the interested reader to a more recent analysis by Albouy & Lequien (2009) with respect to education and mortality.

frequency for a sample of individuals with and without HE, derived from the BCS70. Specifically, the authors estimate a series of dynamic models, some of which were robust to self-selection (omitted variables) and the causal nature of past smoking on current smoking (addiction model). The authors' results suggest that having HE was found to reduce current smoking participation and intensity. Moreover, factors such as occupation and income were only found to mediate a small part of the overall association with HE.

Alstadsæter (2011) investigates whether a specific form of HE is associated with significant consumption value. The author conducts the analysis on a sample of high ability male education and business college students, drawn from 3 linked Norwegian data sources. The authors restrict their sample to males as few women attended business schools in the 1960s. Specifically, their data is sourced from the 1970 Household Census, Earnings and the Core Administrative Register[64]. The author estimates the ex-ante and ex-post price of the consumption value of teachers' college using a generalised version of Rosen's (1986) compensating differential model. Controlling for various selection issues, hours worked and taxes; the author estimates the consumption value of attending teacher's college at 22.2% of a graduate's potential lifetime income. Therefore, despite the option to undertake an alternative HE course (some of which are characterised by higher aggregate earnings and earnings growth), men still train to become teachers, providing evidence that certain forms of HE have significant consumption value. It may be that teaching is innately more attractive to some individuals because it is a vocation, offers a more secure income, higher fulfilment through public duty, etc.

Black et al. (2005) investigate the causal nature of the intergenerational educational transmission of education, using a national sample of Norwegian parents and their children drawn from a linked administrative dataset[65]. Broadly the authors estimate two models which estimate the influences on the number of years of education obtained by the parent and child respectively. Covariates include parental age, municipality and whether the participant was affected by 1959 educational reform, which extended the period of compulsory schooling from 7 to 9 years. OLS results confirm a strong correlation between parents' education and that of their children. On the other hand, IV analysis which used the educational reform as an instrument, only revealed a significant correlation between mothers' and sons' education. Taken together these results suggest

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[64] Population-wide survey providing information on participants' employment, education, individual and background characteristics.

[65] We refer the reader to Møen et al. (2003) for a detailed description of the dataset.

that there exists only a weak causal relationship between parent and child education, implying that omitted variables are positively biasing this relationship. Given their results, the authors conclude that the costs of acquiring additional years of education for their children are lower for better educated mothers.

In a later study, Amin et al. (2015) investigate a curious finding in the educational intergenerational transference literature. Namely that twin studies emphasise the importance of fathers' education whereas IV studies emphasise the importance of mothers' education. In their own study, the authors estimate the intergenerational associations and potential differential effect of parental education by twin zygosity, gender and controls for parental schooling. They employ OLS with robust standard errors on a linked dataset comprising of the Swedish Twin Registry with Statistics Sweden. Their data contains demographic information on the Swedish population between the ages of 16 to 64 in 1999. The findings confirm the joint importance of mothers' and fathers' education. Nevertheless, the importance of mothers' education does however appear to be largely driven by daughters' schooling. The authors argue that role model effects are the most likely explanation for this association. Placing this into context, an additional year's education increases years of education completed by their daughter by a tenth of a year. Overall though, the importance of parental education appears to be diminishing through time as the association is notably reduced for later cohorts.

In this subsection, we discussed evidence relating to the non-pecuniary benefits of education which are generally much harder to quantify because the data available is quite poor with respect to adequately capturing key information. This inevitably results in fewer studies that specifically focus on changes after participation in HE, focusing instead on education more generally. Nevertheless, the evidence presented does indicate that education appears to exhibit a positive causal relationship on job-satisfaction and health. It is however important to bear in mind that much of this evidence was taken from country-specific studies and may not be directly transferable to the UK. Broadly, the evidence presented also suggests that the incidence of being overeducated has a direct negative effect on life satisfaction although the net effect (considering the indirect benefits) is positive (Powdthavee et al., 2015). We also presented evidence which suggested education exhibits a non-linear relationship with health, with the benefit of additional years of schooling declining on health as years of schooling increases. It was also revealed that although more educated people are no more likely to be married, the evidence appears to support the assortative mating hypothesis. This is where individuals with similar levels of educational attainment are more likely to marry spouses who possess similar characteristics. Moreover, the incidence of smoking amongst HE participants was also found to be lower, perhaps through greater understanding of the harmful effects. It would also appear that Human Capital acquisition has an intergenerational effect. This implies that, on average, children of more educated parents are likely to be more educated themselves. Therefore, although we cannot comment on whether these non-pecuniary benefits have changed over time or give reliable estimates, we can confidently conclude that education is associated with substantive non-pecuniary benefits.

2.4.3 Social returns to Higher Education

The previous sub-sections made the case that substantive pecuniary and non-pecuniary benefits do attribute to the individual from participation in HE. Nevertheless, society also stands to benefit from an increasingly educated population. For instance, the Exchequer can expect to receive higher tax receipts. Other benefits may include a more productive workforce, higher economic growth, improved public health, reduced criminality, a more civic society and higher intergenerational educational transmission. Specifically, research by OECD (2017) across member countries with data estimates that the total social return of supporting a man and woman in tertiary education is US $208,900 for a man and $135,200 for a woman. Nevertheless, this does come at a cost, as the same report put the total public cost (including both direct and indirect costs) at US $54,900 for a man and $51,800 for a woman. We now review some contributions to the empirical literature with respect to social returns.

Conventional wisdom would suggest that formal education will improve productivity through skill enhancement. Chevalier et al. (2004) test whether education enhances productivity or serves in a signalling capacity. Their test utilises a natural experiment, the 1973 expansion in the compulsory school leaving age from 15 to 16 in the UK, using samples derived from GHS. The aim is to assess the impact of changes in educational incentives with respect to school participation. The authors reason that if education acts as a signal, forcing one group of individuals to participate in an additional year of education, this should cause other groups to invest in additional education to maintain a credible signal. Specifically, the authors conduct a Chow test[66] for the equality of coefficients between samples of individuals obtaining no qualifications born 1956 to 1958. The impact of raising the school leaving age is also estimated with respect to the probability of achieving specific educational levels. The authors find this is only positively associated with the acquisition of Certificates of Secondary Education (CSEs) for men.

On a similar theme, Sabates (2010) investigates the associations between educational expansion, economic growth and antisocial behaviour using temporal evidence from England. The authors consider a policy initiative, Educational Maintenance Allowance (EMA)[67] which was trialled in 15 Local Educational Authorities (LEA) in 1999 and was intended to bolster participation in non-compulsory education for those aged between 16 and 18. The author hypothesises that when educational expansion and economic growth occur together, they will have a multiplicative effect with respect to reducing youth criminality. He explores these associations by utilising youth unemployment data, crime data (sourced from the Home Office Offender's Index) and a policy initiative (undertaken by the Department for Education and Skills). Differences-in-differences were then computed with respect to fast and slow economic growth for LEA and non-LEA areas, using changes in juvenile conviction rates with area fixed effects. The author's results indicate that educational expansion appears to reduce youth criminality but find no like-for-like effect with respect to economic growth.

As we outlined earlier, increasing an individual's schooling has been consistently found to be associated with positive health outcomes. It would therefore follow that better individual health outcomes may lead to reduced hospitalisations for preventable ailments which is costly to society. Behrman et al. (2011) investigate the causal association between schooling, hospitalisation and mortality using linked Danish twin data. Specifically, the authors make use of a longitudinal sample of twins born between 1921

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[66] The authors also employ additional tests to determine whether the distributions of school leavers pre- and post-reform are different. These tests include Kolmogorov-Smirnov and Duncan displacement test. The Kolmogorov-Smirnov tests the equality of the distributions pre- and post-reform. Whereas the Duncan displacement test informs on the proportion of one group that would need to shift groups in order to equalise the distributions pre- and post-reforms.

[67] EMA was a means-tested and post-compulsory education participation-based allowance amount paid to individuals up to a maximum of £30 a week (during term time, with achievement bonuses) to increase enrolment in FE in the UK. The programme was brought in by New Labour in 1999 (1997 to 2010) and subsequently replaced with a less well-resourced but more targeted bursary scheme by the Conservative-Liberal Democrat coalition (2010 to 2015).

and 1950; derived from the Danish Twin Registry,[68] supplemented by population-based registers from Statistics Denmark. The study provides within-pair estimates of schooling coefficients for two measures of days hospitalised between 1980 and 2002 and mortality prior to 2003[69]. The authors estimate schooling coefficients for number of days hospitalised using standard and within-twin pair estimates for 5% of the sample, monozygotic and dizygotic twins. Initially, irrespective of cohort (e.g. 1921 to 1935 and 1936 to 1950) and then by gender. The results indicate the existence of strong negative associations with respect to schooling, hospitalisation and mortality.

One often cited potential benefit of education is that a more educated electorate are able to select and vote for more effective leaders. Milligan et al. (2004) utilise changes in the compulsory schooling laws, using an IV approach in the UK and US to model the association between education and civic participation. They test whether an increase in years of education undertaken increases the probability of voting, whilst also examining whether better educated voters are politically more informed and have a higher likelihood of participating in political or community meetings and activities. To conduct the analysis, the authors utilised samples from the US Annual National Election Studies linked to the November Voting Supplements (part of the then current Population Survey), and UK British General Election Studies linked with Barometer Surveys. The results reveal that highly educated individuals are more likely to register higher scores for political and community interest and are more likely to belong to a political group, follow campaigns and discuss politics. The results also show a strong positive correlation between education and voting habits in the US, but not in the UK. The authors attribute this to the influence of more user friendly and assisted registration programs in the latter.

Since the early 1980s, income inequality has increased in most developed countries, despite educational expansion. Formal education is however, seen by many as a way of reducing inequality. Reducing inequality and creating a more equitable distribution of income may yield a number of social benefits, such as increasing trust between citizens,

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[68] The Danish Twin Registry is one of the oldest registries of its type in the world. The data contains detailed information on twins born in Denmark from 1870 to the present day.

[69] The authors argue that their study is less subject to measurement error than previous studies for three reasons: first, educational data is sourced from the 1970 census, which is closer to when these were obtained and thus less likely to incur recall errors; second, use of administrative data for 48% of monozygotic twins is presumably measured to very low error; third, measurement error biases resulting from calculating noise-to-signal ratio for the whole sample (excludes that half the sample is drawn from administrative records) are smaller than those of individual estimates.

reducing crime and creating better public institutions. Martins & Pereria (2004) explore the association between education and wage inequality using largely household survey evidence from 16 countries[70]. The authors estimate Mincer's (1974) equation using Becker's (1975) framework of gross hourly earnings for male full-time workers[71]. Whilst there are country specific effects, the key stylised fact that emerges from the results is that returns increase over the wage distribution, i.e. returns are higher for those whose unobservable characteristics place them at the top of the conditional wage distribution. This implies that schooling has a positive effect on within-group wage inequality. Therefore, the authors caution against cutting wage inequality by investing in higher schooling because, even if the population was only made up of highly educated individuals, the economy would still exhibit significant levels of wage inequality due to the increased spread in returns.

To summarise, the public sector invests significant amounts of public funds to support individuals through HE. For instance, the OECD (2017) reports that, the total public cost of supporting a man and woman in tertiary education is $54,900 and $51,800. Nevertheless, the same report estimated that the total public benefits are $208,900 and $135,200 for a man and woman respectively. However as rich sources of data are relatively sparse, social returns are hard to quantify. This led us to expand our search to focus on education more generally and research conducted in other countries. Education has also been found to be associated with a range of positive social returns, e.g. lower criminality, rates of hospitalisation, mortality and higher political engagement. We can also be confident from the evidence presented on social returns, that the use of public funds to support individuals through HE is justified. However, education was also found to reduce within-class wage inequality but expanding HE provision can do little to reduce between-class wage inequality.

We can conclude from the returns literature that, despite the rapid increase in HE participation witnessed in the UK, HE still represents a good personal investment, with the graduate wage premium remaining relatively constant. However, evidence does point to a widening in the variance of pecuniary returns with these positively correlated with family background. This would suggest that merely expanding education would do

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[70] Austria, Denmark, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and USA.

[71] Data restrictions mean that net earnings are used for Austria, Greece and Italy. Excluding France and Spain, total wages are divided by total hours. For the former, only yearly gross income was available and this was divided by 1760 hours.

little to address inequality. Moreover, in addition to education having significant consumption value, education was also found to be associated with significant non-pecuniary benefits. Substantial social benefits also accrue, e.g. higher tax revenue for the exchequer, lower rates of criminality and improved public health.

2.5 Gaps in understanding UK Higher Education participation

Part of the motivation for conducting this research is that despite considerable policy effort (e.g. provision of bursaries/fee waivers for the poorest students, outreach activities, etc.), some groups remain unrepresented in HE. In this section, we turn our attention to examining the gaps in the HE participation literature. We argue that not only do cultural and social influences matter, but that improved understanding of these could highlight an underutilised policy avenue. In this section, we introduce the reader to the concepts of Cultural and Social Capital. We also discuss the methods and tools employed in the various literatures to capture/operationalise the concepts and what we suspect is there impact on HE participation. Furthermore, we also elaborate on how we would like to operationalise the concepts based on our theoretical understanding and other potential sources of influence.

2.5.1 Cultural Capital

Bourdieu was one of the first scholars to formalise the concept of Cultural Capital. He rejects the validity of HCT, hypothesising that there are only three genuine forms of capital - Economic, Cultural and Social Capital, with the latter two convertible (in certain conditions) to Economic Capital (Bourdieu, 1986). Importantly, Bourdieu & Passeron (1977) argue that Cultural Capital is a means through which power can be reproduced inter-generationally within a social class. This is known as Cultural Reproduction Theory (CRT). CRT hypothesises, that the academic system (emphasising the role of educators) and its inter-relationship with Economic Capital is an important facilitator through which social status is reproduced between generations. Specifically, the authors' draw attention to the educational level and the hierarchy between and within educational institutions. This includes the impact educators have on the aims and aspirations of students and to what extent the dominant culture is transmitted. Just as Economic Capital can be used by parents to send their children to elite fee-paying schools, it can also be used to access and partake in certain cultural activities. Parents like educators, also help shape the attitudes, aims, perceptions and eventual academic success of their children through their own stores of Cultural Capital; a form of intergenerational cultural transmission.

Bourdieu (1986) hypothesises that Cultural Capital comes in three distinct forms: the embodied, the objectified and the institutionalised states. The embodied state refers to the integration of Cultural Capital within oneself. Bourdieu writes:

> *"This embodied capital, external wealth converted into an integral part of the person, into a habitus, cannot be transmitted instantaneously (unlike money, property rights, or even titles of nobility) by gift or bequest, purchase or exchange."* (Bourdieu, 1986, p.48)

It is clear from this that the process of accumulation of embodied Cultural Capital (Habitus) can occur both consciously and quite unconsciously, with its accumulation marked by the conditions associated with its formation. For instance, a more advantaged family background may aid embodiment, as might membership of a particular class or religion. The embodiment of Cultural Capital can therefore be viewed as the process of self- cultural improvement which cannot be done second-hand, it declines with time and is lost at death. The objectified state refers to culture objectified in material form such as artworks, cultural paraphernalia, scriptures, sculptures and the like. However, the transmissibility of culture in the objectified form depends on an individual's embodied culture, as possession of objectified culture does not necessarily imply embodiment. Nevertheless, the act of bequeathing ownership of objectified forms (economic transfer) can be thought of as a cultural transfer. Lastly, the institutionalised state refers to Cultural Capital recognised by the state in the form of a certificate of cultural competence, such as an educational qualification. Institutionalised Cultural Capital, grants the holder autonomy in use, whilst also facilitating the transubstantiation of Cultural Capital into Economic Capital. However, its value is dependent on its relative scarcity.

DiMaggio (1982) and DiMaggio & Mohr (1985) however present evidence from the US that rejects Bourdieu's CRT. Both studies utilise Project Talent data which contains responses to a series of questions regarding high-cultural interests and activities from approximately 3,000 children in the eleventh grade (age 16 to 17) in 1960. The authors regress their measure of Cultural Capital (derived using factor analysis[72]), individual and

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[72] DiMaggio (1982) conducts factor analysis on measures relating to attitude, cultivated self-image, participation in Arts & Crafts, artistic, musical, literary interest and knowledge. From these they extract four factors which the author calls: 'Cultural Interests', 'Cultural Information',

family background characteristics on school success. Separately, DiMaggio (1982) uses self-reported grades in English, Mathematics, History, Social Studies and a composite score combining all subjects. Whereas DiMaggio & Mohr (1985), utilising a follow up sweep, focus on college attendance and marital-selection. If CRT is accurate, then one should expect that Cultural Capital has the highest return to children from high-status families and vice versa. However, the results indicate some disparity by gender. For instance, the results for females are as the CRT model would predict. For males however, Cultural Capital was found to have the lowest impact on those whose father has a college education. This suggests that Cultural Capital is less tied to family background characteristics than Bourdieu argues. This prompted DiMaggio to propose an alternative hypothesis, i.e. Cultural Mobility Hypothesis. Here participation in high-status cultures may be a way for low-status students to achieve social mobility. Indeed, the social dimension appears more important than Bourdieu recognised.

2.5.2 Social Capital

It is generally regarded that the development of Social Capital, as a theoretical construct, has been influenced by the contributions from three prominent academics. The first is Bourdieu (1986), who included Social Capital alongside Economic and Cultural Capital which he believes constitutes one of the three main forms of capital. Bourdieu (1986) defines Social Capital as an individual's access to additional resources and sources of information through association of a group. He continues by arguing that the potential yield of Social Capital will depend upon the size of the social network, solidarity within the network (which may be enhanced through a title of nobility and/or marriage) and the quantity of the other capitals (Economic and Cultural) each individual in the network possesses. The precise amount yielded will, however, depend on individual and collective investment strategies.

In contrast, for Coleman, Social Capital consists of a system of obligations, expectations, information channels and social norms between individuals associated with a particular group. Coleman (1988) demonstrates a need for the concept[73], in order to explain the positive association between high school dropout and faith schooling. Importantly

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'Cultural Capital' and 'Middlebrow Activities'. DiMaggio & Mohr (1985) follow the same procedure as DiMaggio (1982) but only include the Cultural Capital scale in their analysis.

[73] Coleman (1988) explains the need for the concept through the short-comings and/or imperfect workings of Exchange Theory by explaining how some markets operate apparently seamlessly; given the absence of more formal contractual arrangements, through implicit contracts.

though, Coleman emphasises the validity of HCT by emphasising the role played by Social Capital in the creation of Human Capital. He does this by drawing inferences from rates of high school dropout in the US, utilising the 'High School and Beyond' sample through which he shows that factors such as attending a faith school, number of siblings, sibling position, single parent household and lack of close family are associated with higher youth dropout. He explains these findings through their negative effect on the ability of parents to monitor and effectively influence/govern (through association) their children's accumulation and creation of Human Capital. He concludes that faith schools are typically characterised by more stratified social environments, which improves academic monitoring.

Putnam defines Social Capital as:

> "*features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating co-ordinated action*" (Putnam, 1993, p.167).

Putnam (2000) distinguishes between two distinct forms of Social Capital. The first he refers to as 'bonding capital', with the second known as 'bridging capital'[74]. Bonding capital refers to horizontal relationships between others of a similar social background and caste. These relationships are often strong and regularly reinforced. Bridging capital, on the other hand, refers to relationships between individuals who may differ in occupation and/or social standing. These ties are weaker and are irregularly confirmed. Both types yield differential returns in different contexts. Large endowments of bonding capital, as opposed to bridging capital, are likely to lead to the formation of close but homogenous networks. This is important because homogenous networks will likely be comparatively poorer with respect to job-leads and as informational sources, whereas they are likely to be superior with respect to raising Economic Capital.

Further significant contributors to the conceptualisation of Social Capital were Bain & Hicks (1998), who distinguish between structural and cognitive Social Capital on the micro level.

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[74] In addition to the distinction between bonding and bridging Social Capital, Putnam also classifies individuals who build largely fluid or enduring social relationships as 'schmoozers' and 'machers'.

> "*Structural Social Capital reflects the connectedness of individuals within a given community (participation in organisations etc. and networks), while cognitive Social Capital taps into feelings of a sense of community (perceptions of reciprocity, norms and trust etc.)*" (Harpham, 2002, p.4).

Grootaert & van Bastelaer (2002), building on Bain & Hicks (1998) insights, explain that structural Social Capital on the micro level will primarily affect state institutions and the rule of law, whilst also affecting local institutions and networks. On the other hand, cognitive Social Capital will affect governance on the macro-level and trust, local values and norms on the micro level.

Social Capital research has typically focused on beneficial outcomes. However, Putnam (2000) uses the concept to explore criminal behaviour[75]. He proposes that strong social relationships within criminal gangs, which replace the absence of legally enforceable contractual agreements, can allow it to operate effectively. In a UK context, we refer the reader to Deuchar (2009) for an evaluation of the role Social Capital plays in gangs and marginalised youth in Glasgow. Indeed, the presence of strong Social Capital within poor communities is what enables microfinance schemes, by NGOs or co-operatives, to operate effectively in the absence of collateral. This does however have a downside, for instance Ashta et al. (2015) provides evidence to suggest that male suicide rise after the introduction of Microcredit schemes. Suggesting that rather than be shunned by their communities for defaulting, individuals will take their own lives. Moreover, just as Social Capital can alleviate poverty, it can also entrench it. Overly tight and homogenous networks may mean that an individual who does comparatively well, or receives a life-changing windfall, may experience an overwhelming number of demands for favours (material or otherwise) which they feel obliged to accommodate. On a related theme, Halpern (2005) also notes an unexpected negative side-effect of a UK policy attempting to reduce the concentration of poverty in specific areas. As part of the policy initiative residents were relocated to more affluent areas. However reports from the residents revealed that many failed to integrate properly within their new communities, leading to a deterioration in both their mental and physical health.

In summary Bourdieu, Coleman and Putnam have all contributed to the evolution of Social Capital as a concept. Whilst Bourdieu (1986) rejects HCT as invalid, Coleman (1988) argues that Social Capital and Human Capital are not only separate concepts, but

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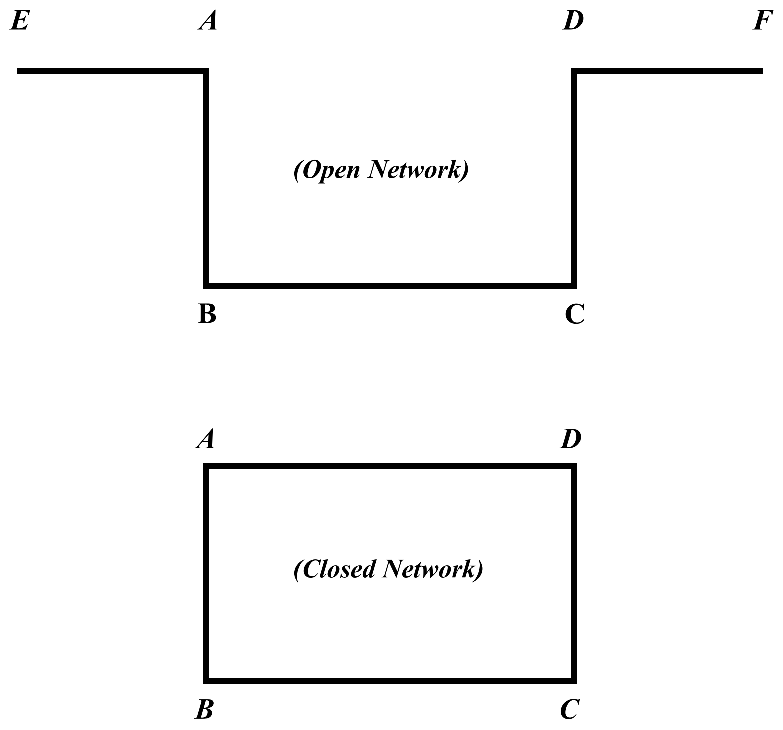
[75] On a macro level, Putnam (2000) also hypothesises that society can be broken down into three competing aspects: liberty, equality and fraternity (Social Capital).

Social Capital helps in the formation of Human Capital. This is the approach we take in our later empirical work. Moreover, Putnam (2000) contributes to the debate by distinguishing between two distinct types, bonding and bridging Social Capital. Lastly, Bain & Hicks (1998) also make a noteworthy contribution by distinguishing between structural and cognitive Social Capital. We now move to outline what constitutes Social Capital for children, its influences and determinants.

2.5.2.1 Children's Social Capital

Children's development is likely strongly influenced by interaction and socialisation with peers. Through this process of socialisation, children develop interpersonal skills, which enable them to utilise their stores of capital more effectively in later life to achieve desired outcomes. It is also likely, particularly in the early years, that a child's outlook and actions will be heavily influenced/guided by their parents. For instance, suppose a child's parents possess low levels of education and have a low employment status. Given this, these parents may view education as being unimportant (having not experienced or otherwise unaware of the benefits) whilst also having access to few high-status social contacts. Under such a scenario a child may be doubly disadvantaged. As the parents' views may be internalised by their child, reducing their effort at school and resulting in low educational attainment of an otherwise able child. Moreover, the lack of high status contacts may reinforce this further by depriving them of additional role models.

Coleman (1988) makes a particularly notable contribution with how the structure of household relationships affect the creation of Human Capital at school. He presents evidence explaining why attending a faith school might be positively associated with higher educational attainment. He argues that intergenerational closure facilitates this by helping parents to better monitor and sanction their children. Specifically, Colman depicts the inter-relationship between a children's parents and their friends' parents. We reproduce it here as Figure 4.



Source: Adapted from Coleman (1988) S105

Figure 4: Parent-child social relationships with and without intergenerational closure

In Figure 4, parents are denoted by the letters *A* & *D*, whereas their children are denoted by *B* & *C*. In essence, Coleman (1988) argues that the social structure of closed networks, as opposed to open networks, may facilitate the establishment of relationships between parents which could enable them to better monitor, intervene and sanction their respective children. In the next section we discuss Cultural Capital, Social Capital and UK policy.

2.5.2.2 UK policy and childhood participation in cultural and social activities

The UK Department for Digital, Culture, Media & Sport (DCMS) is largely responsible for coordinating and implementing cultural and social policy on a national scale. The DCMS is a ministerial department which supports, and is in turn supported, by 43 agencies[76] and public bodies. In this section we will discuss a few significant events that have happened in the UK's cultural and social sphere in recent times. Then to get a sense of childhood participation, we present rates of engagement in a range of cultural and

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[76] Arts Council England, British Library, Natural History Museum and Visit England.

social activities. This is important as some of these are used in the literature to proxy for Cultural and Social Capital.

Probably one of the most significant events to happen in the UK cultural sphere was the reintroduction of free admission to UK state-sponsored museums and galleries housing national collections in 2001. At the time, this came at a cost to the taxpayer of £40 million per annum (Cowell, 2007, p.206). Removing admission prices was intended to increase the number of admissions, particularly from lower socioeconomic groups through the removal of a cultural access barrier. Martin (2002), utilising responses from the British Omnibus survey[77] in 2002, conducted some initial descriptive research shortly after the introduction of free admission. This revealed that, although visitor numbers increased across all groups, up by 62%, attendance rose fastest for those in higher socioeconomic groups. Amongst lower socioeconomic groups, 23% indicated that the museum or gallery was difficult to get to, or that the cost of the day out was prohibitive, indicating that substantive barriers to access still remain.

More generally, the Arts & Humanities Research Council (AHRC) have published a report in 2015 which assesses the economic value of cultural institutions. The report approaches the issue through applying a variety of valuation methods, i.e. stated preference, contingent valuation, wellbeing and hybrid approaches on visitor survey responses; to assess the non-market value and social impact of two cultural institutions, namely the UK Natural History Museum and Tate Liverpool. Generally, the valuation methods returned plausible estimates, which were similar to the charges for paid exhibitions at UK museums. For instance, visitor use values averaged £6.65 and £10.83 for the Natural History Museum and Tate Liverpool, respectively, whilst non-use values averaged £2.78 and £8.00 respectively. However, the authors note significant demographic differences between the visitor profiles and as such propose a number of best-practice methodological recommendations for future valuation exercises.

On the other hand, one of the most significant events to happen to UK sport in recent years is the 2012 London Olympics and its legacy. The Olympics cost £8.77bn, but it was hoped that the legacy of the games, would bring tangible benefits such as regeneration of East London, increased economic growth, lifelong activity, healthy

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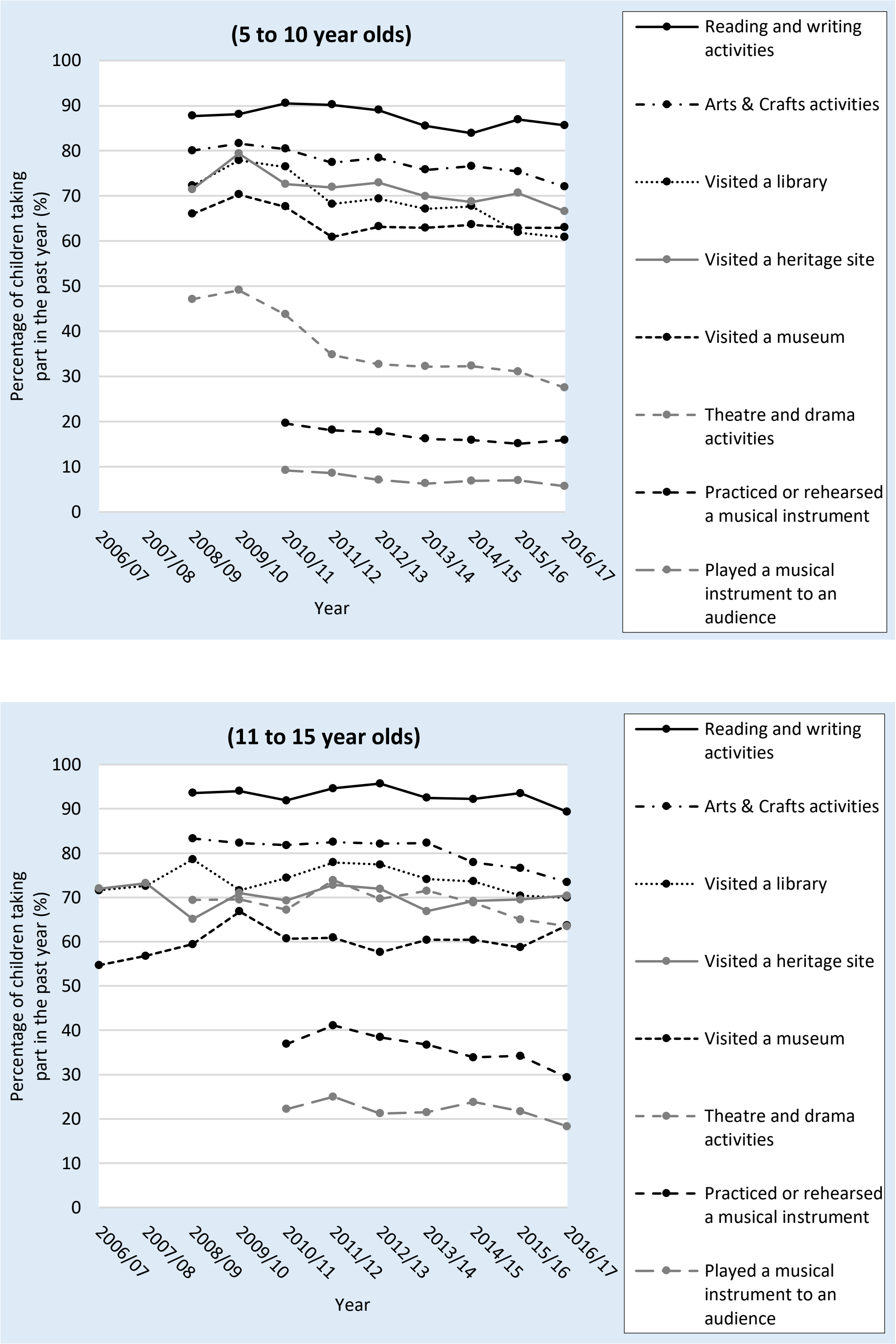
[77] The British Omnibus survey is a cost-effective method of conducting quantitative research in which several clients jointly finance the survey, which asks for the opinions and attitudes of participants to a variety of different topical questions.

eating, etc. The games were also accompanied by promises of a 13% increase in funding for elite sport until Rio 2016, an additional £27 million to help fund and support bids to host 70 further major sporting events; and a £1bn increase in spending on school and community sport. It is still too early to establish whether the London 2012 Olympics has had a lasting legacy. Initial signs were however, positive as a report in 2013 suggested an increase of 1.4 million people regularly partaking in sport since the bid was won in 2005 (HMGML, 2013, p.13). Nevertheless Brittain et al. (2017) in a recent book, which assesses the legacies of mega events, raises serious concerns. In it the authors argue that the UK post-games national sporting policy seems to lack co-ordination, whilst the closure of some initiatives (as a result of the continuing austerity drive) contradicts the government's stated aim of encouraging more to partake in sport.

We now move on to assess levels of engagement in various cultural and social activities for two groups of school-aged children. This information was sourced from the Taking Part household survey. The survey was commissioned by the DCMS with the aim of informing on the range of cultural and social activities that children (and separately adults) participate in. In the figures that follow, we illustrate the proportion of school-aged children in two age groups, primary (age 5 to 10) and secondary (age 11 to 15), who participate in a selection of cultural and social activities between 2006/07 to 2016/17. Our choice of cultural activities is informed by the Cultural Capital literature. Specifically, we include interests/activities/pastimes considered to be high-brow (Dumais, 2002), e.g. visits to museums and heritage sites, theatre and drama activities, practicing with musical instruments, interest in and knowledge of art, history, literature but also Arts & Crafts.

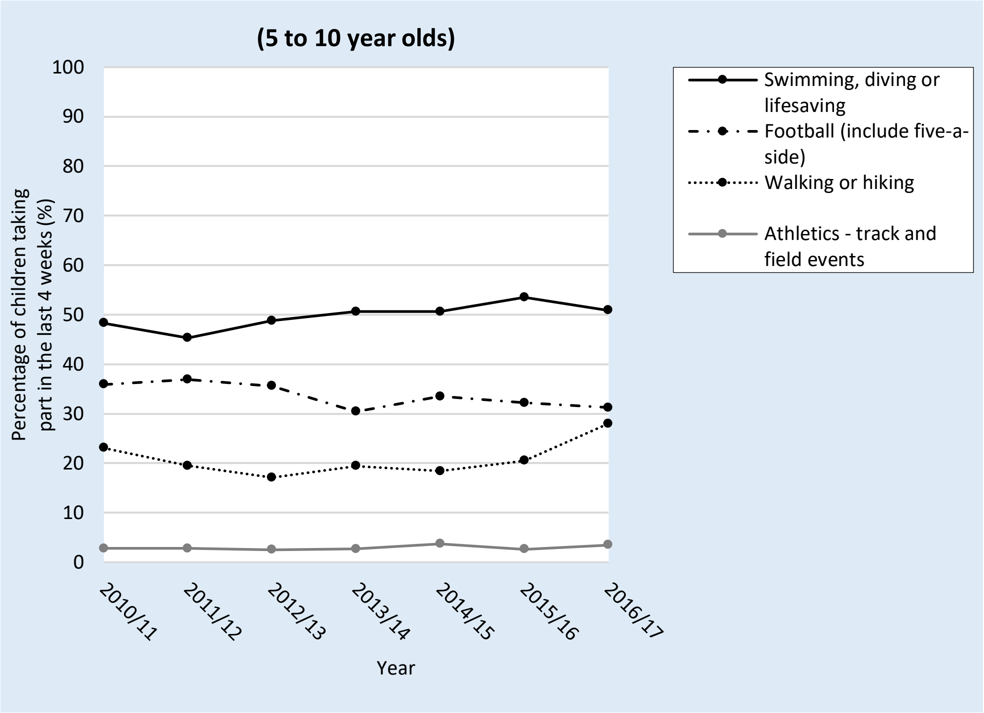


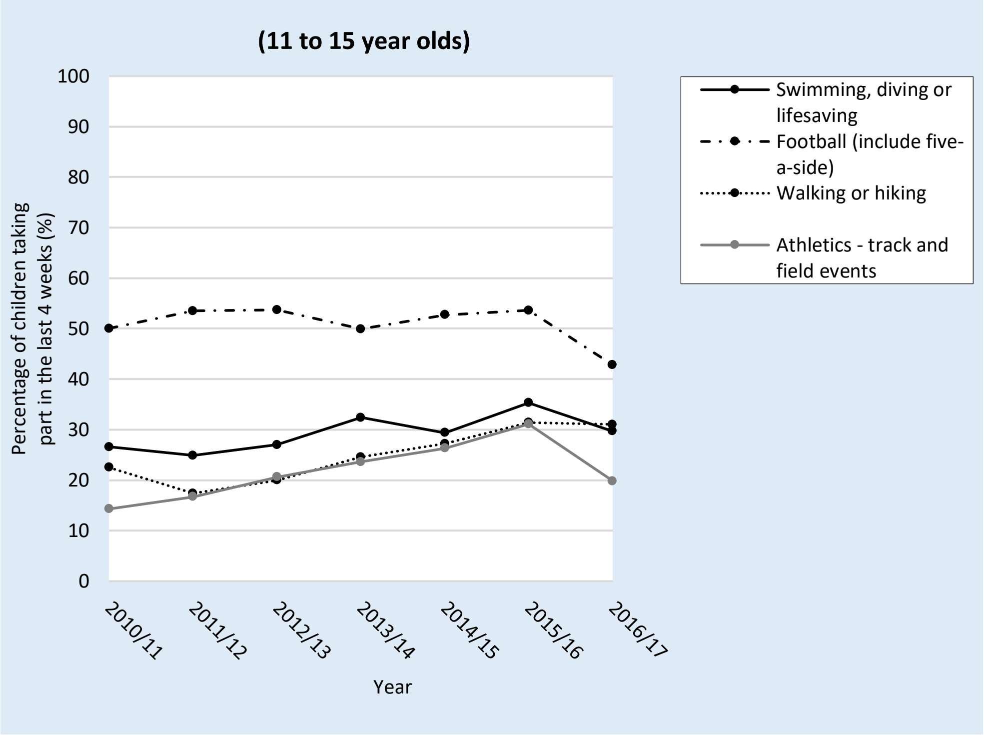
<u>Source</u>: DCMS (2017)

Figure 5: UK cultural activity participation in the past 12 months: 2006/07 to 2016/17 by age group

There does not appear to be too much variation in the percentage of children participating in these activities across the years within age group. However, we do note differences in the percentage of children engaging in these activities across age groups. For instance, practicing with, rehearsing for or playing a musical instrument to an audience in the past 12 months appears to be a minority interest for the 5-10 age group but the incidence rises for the age 11-15 group. Participation in theatre and drama activities (rehearsed or performed in a play, drama, opera, operetta or musical theatre) between the 5 to 10 and 11 to 15 age group can be viewed similarly. Nevertheless, we do observe consistently high participation across both age groups in reading and writing activities (which does not include reading newspapers, magazines or comics) and arts & crafts.

We now consider the proportion of children in these two age groups, who participate in a selection of individual sports within the last 4 weeks, between 2006/07 to 2016/17. Our choice of which pursuits to illustrate is informed by indicators used in the Social Capital literature and popular activities, e.g. Athletics (Dufur et al., 2013a; 2013b). However, these activities were minority pursuits (less than 10% children taking part) and did not change much between the age groups.





Source: DCMS (2017)

Figure 6: UK social activity participation in the last 4 weeks: 2006/07 to 2016/17 by age group

From Figure 6 it would appear that, for the age 5 to 10 category, athletics starts from a low base. Swimming appears particularly popular for the 5-10 group. However, once we move to the age 11 to 15 group, the percentage of young people taking part in football and athletics (particularly) increases. We observe quite a significant decline in the percentage of children swimming, which might be due to this (along with water safety) being part of the KS1 and KS2 curriculum but not KS3 and above.

2.5.3 Measuring Cultural and Social Capital: approaches and issues

Using the theoretical understanding introduced in sections 2.5.1, 2.5.2 and 2.5.2.1, the aim of this section is to elaborate on how we would like to operationalise the concepts of Cultural and Social Capital. In previous sections, we argued that academics are still engaged in a fierce debate with respect to their origins, structure, composition, transformation and effects. This has made their measurement challenging. To help the reader relate this discussion to the literature, we include two summary measurement tables. These contain summaries of a selection of Cultural and Social Capital studies that we introduce and discuss fully throughout the remainder of this thesis.

Table 1: Measurement summary table of a selection of Cultural Capital studies

Cultural Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Bourdieu (1986)	Theory paper - proposed the forms of capital. No data source.	'Embodied' capital – Sum of individual and collective investment in a person. Demonstrable by their cultural aptitude (habitus) which is reflected in their knowledge, tastes and actions. 'Objectified' capital – possession (or access to) objects of cultural significance, e.g. artworks, sculptures, scripture and other paraphernalia. 'Institutionalised' capital – public recognition of status, e.g. title of nobility, membership of an organisation, educational qualifications, etc.	Advocates Economic, Cultural and Social Capital are the only genuine forms. Arguably the first author to conceptualise Cultural Capital. Differentiates between embodied, objectified and institutionalised forms. Focuses on the role of Economic Capital as an important facilitator. In his later work (with Passeron – 1977) he proposes the Cultural Reproduction Theory whereby social status can be reproduced across generations. Wide application to understanding social phenomenon.
DiMaggio (1982) and DiMaggio & Mohr (1985)	DiMaggio (1982) focus on English, Mathematics, History, Social Studies and a composite score of all self-reported grades. DiMaggio & Mohr (1985) educational attainment and college attendance. US Project Talent data, 11th grade pupils.	Utilizes factor analysis. Operationalises the concept via Cultural Interests (compose music, poetry, compose pieces of Art, visit Art galleries and read literature), Cultural Information (English literature, Music and Art), Cultural Capital (Symphony concerts, performances, Arts attendance, public literature readings and cultivated self-image) and Middlebrow Activities (drawing, photography, crafts, woodworking and sewing). DiMaggio & Mohr (1985) follow the same procedure but only include 'Cultural Capital' measure.	Captures embodied form. Rejects Bourdieu's CRT and proposes a Cultural Mobility hypothesis. Determinants of educational attainment and influences affecting college attendance.
Kalmijn & Kraaykamp (1996)	Determinants of Cultural Capital and years of schooling completed. US Survey of Public Participation in the Arts. Black and non-Hispanic white people (aged 25 and over).	Parental Cultural Capital attending classical music performances, plays, art museums and encouraging child to read.	Captures embodied form. Distribution and accumulation Cultural Capital amongst population. Determinants of educational attainment.

Table 1 (Continued)

Cultural Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Aschaffenburg & Maas (1997)	Four educational transitions (early years to high school, high school graduation, high school completion to college attendance and college graduation. US Survey of Public Participation in the Arts; sample drawn from 1982, 1985 and 1992 sweeps.	Child's Cultural Capital is captured via whether they took lessons in five cultural domains (music, visual arts, performance, appreciation/history of art and music separately). Parental Cultural Capital (composite measure of average participation) is captured via listening to classical music or opera, visiting art museums/galleries, attending performances and encouraging the participant to read.	Captures embodied form. Cultural Capital association with successive HE transitions. Found to have a declining impact with successive educational transitions, excluding college.
De Graaf et al (2000)	Children's educational attainment. Netherlands Family Survey Registry, 18 to 64 year old residents.	Parental Cultural Capital Arts participation (visiting galleries, museums, opera or ballet performances, theatrical performances and classical concerts) and reading habits (regional or historic novels, thrillers, science or war novels, Dutch literature, translated literature and literature in a foreign language).	Captures embodied form. Determinants of educational attainment. Cultural Capital appears to exhibit stronger associations than family background.
Sullivan (2001)	Cultural Capital distribution amongst the population and association with GCSE attainment. Explores implications of Cultural Reproduction Theory. Four UK secondary school-based surveys of final year students.	Child's Cultural Capital is captured via leisure activities (reading habits, programs watched, music listened to, attending galleries, theatre or concerts), knowledge of cultural figures (test of famous people) and language (active and passive language scores). Parent's Cultural Capital is captured via their child's reflections on their parent's reading, music listening habits, public events attendance and topics discussed in home.	Captures embodied form. Cultural Capital differences by social class and parental education. Determinants of educational attainment. Cultural Capital is associated with intergenerational transmission but CRT only offers a partial explanation.
Dumais (2002)	School success as measured by Grade Point Average. US National Educational Longitudinal Study, 8th grade white-only pupils.	Child's Cultural Capital is captured via participation in six cultural activities (art, music, dance lessons, attending concerts/other musical events, visiting museums and reading). Habitus is captured via a child's future educational occupational expectations.	Captures embodied form, with a specific attempt to capture Habitus. Determinants of educational attainment. Generally, weaker associations found for males.

Table 1 (Continued)

Cultural Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Kaufman & Gabler (2004)	College attendance and graduation. US National Educational Longitudinal Study, white-only pupils who responded to the 1988, 1990, 1992 and 1994 sweeps.	Cultural Capital is captured via indicators related to (parental, child or joint participation) in art, music and dance lessons outside of school; visits to the public library, music concerts/events and art museums; in addition to if the child took music, art, language or dance classes outside of school and whether the child participated in a number of extracurricular activities within school.	Captures embodied form. Determinants of college attendance and completion. Participation in Arts does not appear important but parents' interest does.
Vryonides (2007)	Student achievement and post-secondary school choices. Survey of final year secondary school pupils and semi-structured interview with parents in Cyprus.	Cultural Capital is captured via engagement in cultural activities (attending the theatre, museum, concert, art gallery and public lectures), cultural and educational resources in the home (whether the participant has access to a personal computer, internet, encyclopaedia, library and authentic artwork) and the number of works of literature read in the last year.	Mixed-methods study. Captures embodied and objectified forms. Determinants of educational attainment and self-selection. Interest in literature and cultural/educational objects found to exhibit positive and significant associations with achievement but not cultural activities.
Noble & Davies (2009)	Likelihood of applying to participate in UK HE. Questionnaire issued to UK final year Sixth Form students at 3 institutions.	Utilizes factor analysis. Operationalises a Child's Cultural Capital via current affairs (television, newspapers, radio and television viewing score), 'high-brow' music (listen to classical, play an instrument and attend classical concerts) and art & literature (attend classical concerts, galleries & museums, theatre, member of a library, frequency of reading books and literature read score). Parent's Cultural Capital was operationalised in a similar way but not included in the main analysis.	Captures embodied form. Determinants of educational attainment and self-selection. Likelihood of application to HE higher for those who participate in cultural activities, are interested in current affairs and listen to high-brow music. Results hint at possible multiplicative effects.

Table 1 (Continued)

Cultural Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Wildhagen (2009)	Three educational outcomes (Grade Point Average, reading and mathematics test scores). US National Educational Longitudinal Study, 12th grade students.	Child's Cultural Capital is captured via indicators related to whether the student takes art, music, dance or language classes and whether the student visits art, science, or history museums on occasions outside of school. Habitus is captured via educational expectations.	Adopts a weighted Structural Equations Modelling framework. Captures embodied form, specific attempt to capture Habitus. Rejects Bourdieu's Cultural Reproduction Theory argument through teacher-selection instead favouring self-selection. Determinants of educational attainment.
Zimdars et al. (2009)	Link between family background and the likelihood of receiving an offer to study at an elite UK HE Institution. University of Oxford Admissions Study.	Cultural Capital is captured via cultural participation (visits to museums, art galleries, classical concerts and ballets) and knowledge (participants were asked to correctly assign the names of 20 famous persons who have been accredited with a major contribution to the field of politics, music, literature and science) scores; whether they have 500 books in their home and whether they read four or more books per year.	Captures embodied and, to a lesser extent, objectified form. Role of family background and self-selecting into elite Higher Education.
Horvat & Davis (2011)	Qualitative study relating to social mobility. US YouthBuild programme.	Habitus is captured via changes to a participant's sense of self-esteem, accomplishment and contribution to the welfare of others before and after the programme.	Qualitative study. Captures Habitus but not the embodied form more generally. Determinants of social mobility post-education.
Gaddis (2013)	School success as measured by Grade Point Average. US Big Brothers/Big Sisters of America Programme.	Cultural Capital is captured via museum attendance, theoretical performances (both in the last 12 months), taking lessons in 'high-culture' (music, art, dance and language) and hours spent reading. Habitus is captured via the inclusion of two variables: the Harter Scholastic Competence Score and the Berndt & Miller School Value score.	Captures embodied form, specific attempt to measure Habitus. Determinants of educational attainment. Habitus found to exhibit large association and mediates Cultural Capital.

In terms of Cultural Capital, a study should ideally inform on to what extent individuals attend or participate in a range of accepted cultural activities, their self-perception (and thoughts on others views) of their aptitude/potential, fluency with and modes of cultural expression. This could take the form of self-indications of whether they watch subtitled films/documentaries, read books for pleasure, watch the news/read newspapers, visit vintage fairs, attend music festivals, number of books in household, owns a musical instrument, rehearses regularly/performs at concerts, etc. In addition to a participant's knowledge of a range of literary works, historic cultural events and persons of renown. As well as information related to a young person's (and their parents') views on progression to HE, likelihood of attendance if got in, their perceptions (and the views they believe others hold) of their own subject-specific/general academic ability and future occupational expectations.

Table 2: Measurement summary table of a selection of Social Capital studies

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Bourdieu (1986)	Theory - proposes the forms of capital. Data source n/a.	Social Capital is defined as additional resources and sources of information available through association of a network. Moreover, its yield is dependent on the size of the social network, solidarity within the network (which may be enhanced through a title of nobility and/or marriage) and the quantity of the other capitals (Economic and Cultural) each individual in the network possesses. This in turn is affected by individual and collective investment strategies.	Advocates Economic, Cultural and Social Capital are the only genuine forms. Arguably the first author to conceptualise the concept. Focuses on the role of economic capital as an important facilitator. Wide application to understanding social phenomenon.
Coleman (1988)	Part theory and part empirical - link between faith schooling and high school dropout. US 'High School and Beyond' sample, 10th grade students.	Social Capital within the family: family structure, number of children, maternal employment and parents' educational expectations. Social Capital outside the family: number of times child has changed schools, school type (public or private – US), faith or secular school and parental involvement with school (Parent-Teacher Associations).	Emphasises Social Capital in the creation of Human Capital. Rejects Bourdieu's assertion that Human Capital is an invalid concept. Breaks family background down into Financial (Economic), Human and Social Capital. Social Capital acts as the facilitator. Coleman's view of Social Capital is that it comprises three forms: obligations and expectations (depends on trustworthiness of social environment), information flow capability and norms (accompanied by sanctions). Determinants of educational attainment.

Table 2 (Continued)

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Putnam (2000)	Book - investigates the decline and subsequent revival of American community. Various data sources used to support arguments.	'Machers' – high investment in formal organisations, e.g. follows current events, attends church & club meetings, volunteers, gives to charity, works on community projects, etc. 'Schmoozers' – spend large amounts of time in informal conversation, e.g. hosts dinner parties, hangs out with friends, plays multiplayer games, visits relatives, gives greetings cards, etc. 'Bonding Capital' – Horizontal relationships between people of a similar social background and caste; these relationships are regularly reinforced. Superior source of Economic Capital. 'Bridging Capital' – Vertical relationships between people who differ in occupation and/or social standing; these relationships are infrequently reinforced. Superior source of information and job leads.	Putnam adopts a more macro view arguing that Social Capital can improve the efficiency of society by facilitating co-ordinated action. Differentiates between 'machers' and 'schmoozers'. Individuals can do both. Social trust governs how connected people are. Also differentiates between 'Bonding Capital' and 'Bridging Capital'. His view is that Social Capital acts as a buffer, helping individuals overcome disadvantage rather than be defined by it. Determinants of educational attainment, incidence of problematic behaviours, attitudes and associations.
Stanton-Salazar & Dornbusch (1995)	Link between parental social status, school grades and educational & occupational expectations. Two school-wide surveys of Mexican-origin students.	From this information the authors construct five measures of Social Capital, these are: the number of high status adults named as likely sources of information, number of non-familial weak ties, school-based weak ties, people actually relied upon for academic guidance or support and average socioeconomic level of students' network.	Establishes a student's social support network using indicators relating to four main areas: peer interaction/recreation, emotional crisis, social material and informational support. Also includes educational and occupational expectations (two commonly used measures of Habitus). Determinants of educational attainment. Language appears to serve in a facilitation capacity.

Table 2 (Continued)

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Furstenburg & Hughes (1995)	Investigate the determinants of high school graduation, college enrolment, labour force participation, social status, incidence of teen pregnancy and criminal activity among disadvantaged black African-American youths. Baltimore Study.	Family-based Social Capital is captured via extended family exchange and support, maternal monitoring and parental investment in the child. Community-based Capital is captured via religious involvement, strength of help network, seeing close friends weekly, child ever changing schools due to a move, friends' educational expectations, quality of school and neighbourhood as a place for children to grow up.	Complements the literature by focusing on resources provided via social networks. Limits complex ethno-cultural interactions. Determinants of various youth outcomes focusing on disadvantaged. Found to be positively associated with social mobility, although its value is contingent on context.
Teachman et al. (1996)	Determinants of high school dropout. US National Educational Longitudinal Study, 8th grade students.	Utilizes Principal Components Analysis. The authors' two primary measures of Social Capital are parent-child (frequency of talking to child about school, school experiences and high school plans) and parent-school connectivity (frequency contacted school about academic performance, study programme, behaviour, school records, participated in school fund raising activities or volunteered). Other Social Capital variables include: whether the child attends a Catholic school, family composition (stepparents, other and maternal marital status) number of times they changed schools and parents know other parents.	Complements the literature by focusing on the parent-child and parent-school relationship. Specifically, takes into account family structure. Determinants of educational attainment. Parental-connectivity (and number of times they change school) explains a large proportion of dropout.
Hofferth et al. (1998)	Link between the provision of extra familial resources and a range of educational outcomes (years of schooling completed by age 22, high school completion and college attendance). US Panel Study of Income Dynamics (black or white children only).	Individual variables include: receipt of pocket money, time spent with family and, separately, characteristics of the local neighbourhood. Family level variables include: family structure, race and a cohort identifier.	Indirect focus on the transference of family Economic Capital to the child. Limits complex ethno-cultural interactions. Determinants of educational attainment. Residential mobility was found to exhibit a converse impact on differing income families. Resources available from non-family more important for college attainment.

Table 2 (Continued)

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
McNeil (1999)	Link between parental practices and various academic outcomes (achievement, truancy and drop out). US National Educational Longitudinal Study, those who appear in 8th and 10th grade sweeps.	Utilizes Principal Components Analysis. Social Capital is operationalised by parent-child school-based discussions (school programmes, activities, material studied and planning high school programme), Parent-Teacher Organisation involvement (membership, attend meetings, take part in activities and volunteer at school), parental monitoring (homework, chores and television viewing) and educational support strategies (attend school meetings, parent-school discussion and school visits).	Complements the existing literature by accounting for the role of parenting with respect to the influence of Social Capital on educational attainment and engagement. Parental involvement only found to be important in explaining incidents of problematic behaviour.
Parcel & Dufur (2001)	Determinants of mathematics and reading scores. US National Longitudinal Survey of Youth, merged data from 1st to the 8th grade.	Social Capital at home is captured via the home environment, mother's knowledge of child's friends and location, church attendance, number of children, parental marital status and working hours. Social Capital at school is captured via type of school (whether state-run, private or religious), teacher-student and counsellor-student ratios, school social problems, school physical environment, parent-teacher communication and parental involvement in school.	Arguably the first paper to construct and isolate separate measures and effects of Social Capital at home and at school. Determinants of educational attainment. Social Capital in both contexts found to work in parallel, no evidence of either serving a facilitation role of intergenerational Human Capital transfers.
Crosnoe (2004)	Link between parent-child relationship and academic outcomes; with a focus on whether school characteristics modify this relationship. US National Longitudinal Study of Adolescent Health, merged data from 7th to 12th grade.	Family-based Social Capital is operationalised by parent-child bonding (relationship, confidant and consultation), communication (personal or school problems), activities with parents (shopping, religious event, sport, cultural event or worked on collaborative project) and family cohesion (understanding, fun and attention). School-based Social Capital is operationalised by pupil-teacher relationship (getting along with teachers, teachers care and treat students fairly).	Adopts a multi-level modelling framework. Determinants of educational attainment. Suggests relationship is indirect and facilitates academic success through the facilitation of parental resources. Identifies differences by ethnicity. No evidence of a compensating effect associated with Social Capital at School.

Table 2 (Continued)

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Vryonides (2007)	Student achievement and post-secondary school choices. Survey of final year secondary school pupils and semi-structured interview with parents in Cyprus.	To capture Social Capital in the family, the survey asked: "How do you expect your family to help you find employment?".	Mixed-methods study. Focuses on familial educational resources. Determinants of educational attainment and self-selection. Association evident between Social Capital in the family, education and occupational expectations.
Hoffmann & Dufur (2008)	Link between family and school resources and their effect on youth delinquency. US National Educational Longitudinal Study and, separately, National Longitudinal Study of Adolescent Health. Those who feature are in the 9th through to 12th grade.	The authors' principal measures of Social Capital are parent-child attachment (child gets along with parents, likes them, feels understood, is treated fairly by them and whether he or she believe they are a disappointment to them), involvement (to frequency with which parents attend school meetings, events, and volunteer in addition to whether parents discuss with teachers: curriculum, activities, material covered, attainment, preparation for SAT/ACT and college attendance) and supervision (who their child's friends are, use of free time, what they spend their money on, where they go after school and of an evening) scale variables.	Adopts a multi-level modelling framework. One of the most comprehensive studies to date by incorporating measures of Social Capital in the family (and local area) and at school. Provides evidence of boosting effects. Determinants of problematic behaviours. Evidence that high quality schools and school-based Social Capital can compensate for low parent-child attachment. Results hint at multiplicative effects.

Table 2 (Continued)

Social Capital Study	**Aim and data source**	**Measurement**	**How do the measures link to the theory and how does the approach inform HE participation?**
Dufur et al. (2013a; 2013b)	Dufur et al. (2013b) investigate influence of Social Capital on test score achievement in English, Mathematics and Science, whereas Dufur et al. (2013a) investigate its effect on alcohol and marijuana use. US National Educational Longitudinal Study, 12th grade students.	Social Capital at home is operationalised via parental trust in child, discussing issues with parents, parents checking student homework, parents attending school meetings and participating in school events. Social Capital at school is operationalised via student participation in extracurricular activities, school contacting parent, high teacher morale, low conflict between teachers and administrators, teachers responding to individual needs and school environment.	Both adopt a Structural Equations Modelling framework, although Dufur et al. (2013b) use a multi-level format. Find that Social Capital, given the indicators they use, is best conceptualised as two distinct contexts (at home and at school) but where one indicator (extra-curricular activities) was found to cross load. Determinants of educational attainment and delinquent behaviours. Social Capital exhibits a positive and significant association with academic attainment despite controls. Social Capital at home associations found to be larger.
Dufur et al. (2015)	Influences on delinquent behaviour (graffiti, damage to property, stealing and joyriding). US National Longitudinal Study of Adolescent Health, merged data 7th to 12th grade.	Utilizes factor analysis. Social Capital is operationalised via mother-, father-child warmth (close, loving relationship, satisfaction with communication and relationship) and discussions with child about school-related topics (grades and other topics). Social Capital is captured via variables relating to sense of school community (close relationships, feel part of school, happiness, fairness and safety) and teachers treating students fairly.	Adopts a Structural Equations Modelling framework. Introduces measures of peer delinquency (smoking, alcohol, truancy and fighting). Determinants of youth delinquency. Social Capital found to exhibit significant positive association, Social Capital in family shown to be larger once controls are added.

In terms of Social Capital, a study should ideally provide information that enables us to directly map social networks (both child and parent), parent-child and parent-child-school relationships. For the former, we envisage information relating to how many family and friends (differentiating between close and acquaintances/extended) a child and their parents have both at school/work and within a certain geographical distance from home. For parents, this could be contrasted with whether they can count on access to monetary and non-monetary help, with the added addition of some indication of the occupational status of each contact. It would also be helpful to gauge to what extent their parents and the child's networks overlap, in order to determine the degree of intergenerational closure. This could be achieved via questions related to whether parents socialise with child's friends' parents. Nevertheless, such an undertaking may be a tall order given the likely difficulty it would be to ascertain both complete and comprehensive data.

More realistically, and given the recent trend in the Social Capital literature, studies should distinguish between home and school contexts – two important spheres in a young person's life. To capture Social Capital at home we envisage using indicators related to: parental involvement, supervision, communication (between both parent-child and parent-school) and parent-child cohesiveness. On the other hand, Social Capital at school could be identified through indicators relating to sense of school community, teachers treatment of pupils and academic monitoring. For instance, do teachers make lessons interesting (child only), teacher morale, teacher-student ratios, respect/admire teachers (school-child only), teachers treat students fairly (child only), check if homework is completed, review academic progress regularly, work hard to engage students, councillor-student ratio, whether there is teacher-administrator conflict, whether a school has social and/or disciplinary problems. We believe it would also be useful to unpick a sense of community with a participant's local neighbourhood as this might be viewed as conceptually distinct from Social Capital at home. Inferences could be gained here from questions relating to whether the participant feels part of/accepted by the local community; whether they participate in voluntary work, take part in community schemes or fundraisers; feel proud to be part of the community and feel safe and area is part of a neighbourhood watch scheme.

Noble & Davies (2009) offer a useful approach. Specifically, they develop and undertake a shortened 15 minute Cultural Capital questionnaire based on Sullivan (2001). This measures participation in cultural activities, cultural knowledge and fluency with modes of expression. The authors then perform factor analysis on the students' cultural capital questions, revealing 3 factors. These factors are current affairs[78], 'high-brow' music[79] and art & literature[80]. Their survey also includes questions relating to parental occupation, parent's education, sixth form attended (3 possible - as these are UK year 13 students aged between 17 and 18) and predicted attainment at A-Level. Further questions were included to capture parental education, household composition and parental Cultural Capital. However, we do not think the survey captures habitus particularly well, as it does not address an individual's aspirations, aims, expectations and household cultural or educational resources. Gaddis (2013) provides some additional questions one might like to include. As in their study the authors include a composite measure of a student's self-perception and/or confidence in the ability to do schoolwork. More generally, this approach could also be re-purposed to capture social influences as well.

More generally, comprehensive tools have however been developed to assess Social Capital in Less Economically Developed Countries. For instance, Krishna & Shrader (2000), as part of the World Bank - Social Capital Initiative Working Paper series, have developed the Social Capital Assessment Tool (SOCAT). The SOCAT contains three main measurement components: community profile, household survey and organisational profile. The community profile utilises mostly qualitative methods to identify contextual issues (cultural and institutional) surrounding what constitutes Social Capital. Group interviews are conducted within local communities, with specific questions related to: asset identification, conflict resolution, community governance, decision making, collective action, local networks and local organisations. The household survey component involves sampling a large number of randomly selected individuals or households. Questions here are closed and relate to structural and cognitive dimensions of Social Capital. The third component, the organisational profile, consists of a semi-structured interviews designed to assess organisational capacity and sustainability, whilst also informing on the networks and relationships that may exist between formal and informal institutions. Alternatively, Grootaert et al. (2004)

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[78] Factor loadings revealed this is weighted most heavily with respect to learning about current affairs through the television, reading newspapers, listening to the radio and general television viewing score.

[79] Factor loadings revealed this is weighted most heavily with respect to listening to classical music, playing an instrument and attending classical concerts.

[80] Factor loadings revealed this is weighted most heavily with respect to attending galleries/museums, going to the theatre, classical concerts, frequency of reading books and literature read score.

developed the Social Capital Integrated Questionnaire (SC-IQ). The SC-IQ is a stand-alone supplementary questionnaire designed to be incorporated within household studies. It assesses Social Capital within six dimensions relating to collective action and cooperation; empowerment and political action; groups and networks; information and communication; social cohesion and inclusion, and lastly trust and solidarity.

Although not measurement tools, the US Social Capital Community Benchmark Surveys (SCCS - 2000), US Social Capital Community Survey (2006) and World Value Surveys (WVS) offer a cross-sectional alternative to longitudinal studies. The former two represent some of the largest civic engagement studies ever conducted, surveying about 30,000 Americans. Questions in these surveys related to Americans' local and political activism, empowerment, community spirit, leisure habits, close friends and family. One of the outcomes from conducting these surveys was the derivation of a short 5 to 10 minute survey, named the Saguaro Seminar which can be incorporated within other surveys. On the other hand, the WVS began in 1981[81] and has since been used in over a 100 countries to investigate beliefs, values and motivations.

In this section we discussed, based on our theoretical understanding, how in an ideal world we would like to capture Cultural Capital, Habitus and Social Capital. We argue that current secondary data sources either omit entirely or do not offer sufficient detail on key cultural and social influences. This inevitably leads researchers to make compromises with respect to how they capture these capital concepts. We also elude to a potentially more meritorious (and realistic) approach that future researchers could employ to investigate these issues comprehensively.

2.5.4 Application of Cultural and Social Capital to UK Higher Education Participation

The literature which applies Cultural or Social Capital to UK HE is rather limited. For instance, a recent ESRC funded collaborative project entitled "Cultural Capital and Social Exclusion: A critical investigation" between 2003 and 2005 uses mixed methods to suggest a way in which these concepts can be investigated in a UK context. In the remainder of this section we begin by firstly discussing the importance of Early Years provision in areas of deprivation and the now closed Aimhigher initiative. We

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[81] Six waves have so far been conducted, with the first taking place 1981 to 1984. A 6 year gap then ensued with the next five waves, each lasting 4 to 5 years, taking place consecutively until 2014.

argue that both of these have relevance to HE participation. Then we move on to discuss the few studies investigating cultural and social influences in a UK context.

A flagship policy of New Labour (1997 to 2010) is the Sure Start Local Programmes[82] (SSLP) in England (with different variants introduced in Scotland, Wales and Northern Ireland in 1998). The SSLPs was a central government area-based initiative overseen by the Departments for Children, Schools and Families and Work and Pensions. SSLPs were tasked with improving child developmental outcomes such as health (physical and cognitive) and academic attainment through the provision of childcare, early education, health and family support in areas of deprivation. In 2005 the responsibility for the provision of SSLP services was transferred from central to local government, and SSLPs also became known as Sure Start centres. The provision of services delivered by a SSLP was intended to be flexible and designed around the needs of local residents. After the transfer, accessibility widened with the creation of a number of Sure Start centres in less deprived areas. The emphasis of these centres shifted to become children's centres which received less funding and whose remit became less targeted. From 2010, under the Conservative-Liberal Democrat Coalition's Austerity Programme, the number of Sure Start centres fell and funding per head for the remainder was also reduced.

The National Evaluation of Sure Start Team (NESS) analysed the impact of SSLPs on 3 to 7 year olds and their families (DfE, 2010). The study utilised two samples to compare those deprived areas which have an established SSLP (treatment group) against those which do not (control). The treatment group was sourced from a dataset compiled by the NESS, which followed up approximately 5,000 children in 150 SSLP areas. The initial survey was undertaken at 9 months, with follow-ups occurring at 3 and 5 years of age. An additional follow-up was conducted at age 7, which contained a random subset of those surveyed at younger ages. The non-treatment group was sourced from the MCS. Specifically, from areas which shared common characteristics to those used in the SSLPs, but do not offer Sure Start services. The report identified positive associations with respect to four out of fifteen outcomes, which related to parent and family functioning. These included reducing the incidences of harsh disciplinarian practices and

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[82] SSLPs share many of the same goals, albeit with the focus on young people, with the now discontinued Social Exclusion Unit, also established in 1997. The Social Exclusion Unit was later amalgamated into the Social Exclusion Task Force, the primary purpose of which was to alleviate area-based issues relating to unemployment, poor skills, low incomes, poor housing, crime, health and family breakdown. The Office for Civil Society has now taken on many of the unit's former responsibilities.

more stimulating home environments for children. Whilst mothers also reported less chaotic environments for boys and better life satisfaction amongst lone parent and workless households. Although no significant associations were found with respect to early educational attainment, the authors do not discount the possibility of a positive impact later on in child's development.

The Aimhigher initiative, on the other hand, was specifically designed to bolster HE participation by targeting those aged 14 to 18 from hard to reach groups, namely those originating from deprived backgrounds or areas with historically low participation in HE. The initiative was created in 2004, as a result of a merger between Partnerships for Progression and Aimhigher Excellence Challenge[83]. It was designed to bolster participation through positively affecting attitudes, expectations and subsequently aspirations of FE and HE through a range of outreach activities. These activities included talks given by graduates, mentoring, summer schools (both residential and non-residential) and visits to universities. However, Aimhigher was decentralised at the end of the 2010/11 academic year as part of a cost cutting exercise, with universities taking on these WP activities (through their outreach departments) as part of their Access Agreements.

Chilosi et al. (2010) present empirical evidence assessing Aimhigher's impact (in an inner-city context) on GCSE attainment, HE application and entry. To conduct the analysis, the authors utilise three sources of data: local Aimhigher partnership and Connexions, Department for Education and Skills schools' and colleges' performance tables and Universities and Colleges Admissions Service data. The authors focus their analysis on those Aimhigher activities regarded as high-intensity. These consist of half- to full-day activities, such as campus tours, HE finance and subject taster days. Specifically, the authors analyse the impact of Aimhigher, computing difference-in-difference estimates based on OLS regression analysis on seven dependent variables across 2 years. Dependent variables include: number of pupils with 5 or more GCSEs A*-C, HE applicants, HE entrants and differences between applicants and entrants by socioeconomic status and ethnicity. Independent variables include: year, cohort size, school independence and school admission characteristics (ability and gender of entry). The results imply that Aimhigher increases the likelihood of achieving 5+ A*-C GCSEs,

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[83] Broad partnership consisting of the DfE and the Department for Innovation, Universities and Skills, who worked in cooperation with HEFCE, universities, colleges, schools, Connexions, other advice and training providers.

whilst boosting the probability of applying and subsequently entering HE by approximately 4ppts. This suggests that Aimhigher's aim of targeting aspirations, rather than influencing attainment directly, was met. The authors conclude by arguing that Aimhigher appears to be a relatively cost-effective of raising HE participation and may even yield a profit to the tax-payer in the long-run.

In the remainder of this section we discuss two recent Cultural Capital studies whose focus is on UK HE. Specifically, contributions by Noble & Davies (2009) and Zimdars et al. (2009). The former looks at the role Cultural Capital plays with respect to explaining the variance in HE participation, whereas the latter explores the association it has with receiving an offer to study either liberal Arts or Natural Science subjects at an elite institution.

A number of studies in the literature note that the effect of social class and other background characteristics on HE participation is mostly explained once appropriate controls for prior educational attainment and other family background characteristics are included. Noble & Davies (2009) contribute by investigating the role of Cultural Capital with respect to the variation in participation in UK HE. To conduct their analysis (as stated earlier), the authors first develop a short 15 minute Cultural Capital questionnaire based on Sullivan (2001)[84]. This was issued to all year 13 (age 17 to 18) students studying for their A-Levels at 3 educational institutions (*n.* = 591), resulting in an overall response rate of approximately 65%. Specifically, the authors estimate four logistic models to determine the influences on the likelihood students intend to apply for HE (likely, or definitely enrol). All models include controls for sixth form attended, parental occupation (professional/managerial or not) and qualification level (HE degree or not). Other models sequentially include educational attainment, a measure of student's Cultural Capital or its constituent indicators (current affairs, music, literature & art). From the results, it is interesting that parental occupation and education do not yield significant associations across all models. The authors attribute this to the high proportion of students (79% to 88%) that indicate they will apply for HE. Nevertheless, the likelihood of applying for HE is higher amongst those with superior educational attainment, higher cultural activity scores and those interested in current affairs, or

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[84] Sullivan's (2001) questionnaire was designed to examine the association between Cultural Capital and academic achievement. It did this by focusing on measuring participation in cultural activities, cultural knowledge and fluency with modes of expression. It was also considerably longer than the others, taking on average 40 minutes to complete. The authors shorten theirs to 15 minutes, after deeming the use of the original questionnaire impractical.

highbrow music. To illustrate the significant influences of educational attainment and Cultural Capital, the authors evaluate the standard deviation (s.d.) changes with respect to a base case. The results reveal that a standard deviation reduction in attainment reduces the probability of applying to HE by 10ppts. Furthermore, a like-for-like reduction in Cultural Capital reduces this by 6ppts. Cumulatively, a standard deviation reduction in both attainment and Cultural Capital results in a 24ppt reduction. This last result would therefore appear to suggest the existence of multiplicative effects. As the negative association resulting from the absence of greater stores of Cultural Capital appears to be larger at lower attainments.

Zimdars et al. (2009) contribute to the debate by seeking to determine to what extent Cultural Capital influences the reported link between family background and an offer of study at University of Oxford (an elite UK HEI). Specifically, the authors address four main aspects and research questions: first, they sought to establish the variability in cultural participation and knowledge by gender, ethnicity and family background. Second, does cultural participation and knowledge increases an individual's likelihood of securing an offer of study at Oxford, even after controlling for examination performance? Third, are Cultural Capital associations larger for the liberal Arts as opposed to the Natural Science disciplines? Fourth, does cultural participation and knowledge mediate the link between family background and the likelihood of being offered a place at Oxford? To investigate these issues the authors, utilising information on 1700 applicants for the Oxford Admissions Study during the 2002 admissions cycle, adopt a mixed method approach. Specifically, the authors estimate two logistic models, with and without the addition of Cultural Capital measures, to determine the influences on an individual's likelihood of gaining an offer of study in the liberal Arts or a Natural Science discipline. Cultural Capital measures used include a cultural participation score (visits to museums, art galleries, classical concerts and ballets), whether the applicant has more than 500 books in their home, reading habits (reads more than four books per year) and an assessment of their cultural knowledge[85] in the form of a test score. The results reveal that individuals whose parents fall into the managerial or professional classification, or were privately schooled, typically scored more highly on Cultural Capital measures and where also more likely to be offered a place. Nevertheless, participation in the Arts does not appear to have a significant influence on the offer of study in either the liberal Arts or Natural Sciences. Cultural knowledge was, however,

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[85] Prospective applicants were asked to correctly assign the names of 20 famous persons who have had a major contribution to either the field of politics, music, literature, art and Science.

found to be positively associated with the likelihood of gaining a place in the liberal Arts. Moreover, the inclusion of cultural knowledge was also found to mediate social class and ethnic associations with respect to an offer of study.

In this section we introduced and discussed the impact of two policy initiatives: SSLPs and Aimhigher. Chilosi et al. (2010) report that Aimhigher was a cost-effective way of bolstering both educational attainment and applications for HE. We also discussed two studies investigating the impact of Cultural and Social Capital on HE participation in the UK, namely Noble & Davis (2009) and Zimdars et al. (2009). From these, we determined that Cultural Capital appears to be particularly influential in determining whether marginal participants, those who have at least 5 A*-C grades (including C grades in Mathematics and English), participate in HE (Noble & Davis, 2009). Whereas cultural knowledge appeared to be an important determinant of receiving an offer in the liberal Arts at an elite HE institution, no significant association was found with respect to Arts participation (Zimdars et al., 2009).

2.5.5 Other potential sources of influence affecting Higher Education participation

The aim of this section is to introduce two other potential sources of influence (although there are likely others) with respect to HE participation, namely parenting and personality, and review some recent contributions to their respective literatures.

2.5.5.1 Parenting

Conventional wisdom suggests that one's parents (or main carer), through their involvement and parenting practices, are likely to play a key influence on the socialization process, e.g. how a young person sees the world, their place within it, understanding of etiquette and how they interact with others. Moreover, it is also likely that this process is bidirectional, in that children can vary in their response. More generally Darling & Steinberg (1993), using a contextual model, argue that parents adopt one of four main parenting styles[86], e.g. Authoritarian, Authoritative, Neglectful and Permissive, depending on their degree of demandingness (encouraging integration into

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[86] Baumrind (1967; 1971; 1978) suggested that there were three types of parenting style, i.e. Authoritarian, Authoritative and Permissive. Each of these varied by maturity demands and responsiveness. Maccoby & Martin (1983) argued later for a fourth style, using this two-dimensional framework, i.e. neglectful (uninvolved).

family and society) and responsiveness (fostering individuality, self-regulation and -assertion). In the remainder of this section we review five contributions to the literature[87], two of which focus on parenting and the other three parenting practices.

Roska & Potter (2011) investigate the role parenting plays with respect to academic achievement and the transmission of educational advantage by social background. To conduct the analysis the authors use a multi-generational sample (children, their parents and grand-parents) derived from the Child Development supplement of the Panel Study of Income Dynamics[88] (PSID). The authors first present some selective regression results to see how social background is associated with differences in three different parenting practices, e.g. concerted cultivation (Lareau, 2003 – singular measure computed using factor analysis on indicators related to three aspects; child participates in organized activities, parental involvement with school and parent-child discussion), participate in high-status cultural activities and whether parents expect the young person will obtain a bachelor's degree. These outcomes are regressed on social background (stable middle and stable working class as reference cases separately – new middle and new working class being the other) with and without controls for sociodemographic and family characteristics. Then, for the main part of the analysis, the authors present OLS models predicting reading and Mathematics attainment, initially pooled and then separated by social background with the aforementioned controls. The results suggest that there is no significant difference between achievement from children whose parents are either new or stable middle class. Indeed, mothers from new middle class seem to have adopted concerted cultivation parenting practices, whilst also participate in high-status cultural activities to a greater extent than mothers who are working class. Moreover, they also have higher educational expectations for their children. On the other hand, children from new working class backgrounds are able to maintain some advantages (superior academic achievement in comparison to stable working class), However, they are found to lose ground in comparison to those who come from stable middle class backgrounds.

Park & Bauer (2002) investigate the relationship between parenting practices and academic achievement (Mathematics and reading test score composite) for a sample of

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[87] We direct the interested reader to Spera (2005) who conducted a comprehensive review of the literature concerning the relationship between parenting practices styles and adolescent school achievement.

[88] The PSID is a nationally representative longitudinal study of 5,000 families which began in 1968 in the US. The original sample contained approximately 18,000 individuals and recorded data on a broad range of areas of interest.

US high school students. The authors utilise a sample of 11,790 sourced from the first (1990) and second (1992) waves of the NELS. In terms of analysis: first, the authors employ Analysis of Variance to gauge the strength of the association between parenting practices and academic achievement by ethnic group; second, then use hierarchical modelling to determine the impact parenting has on achievement, after controlling for socioeconomic status); and lastly, stepwise regression in order to inform on what effect differences in sample sizes has with respect to the reported associations by ethnic group. To capture parenting practices the authors use exploratory factor analysis and extract four factors from 16 questions, e.g. supervision (knowledge of child's friends, whereabouts, spending habits and leisure time activities), strictness (privilege-withdrawal), support (attend school meetings and school involvement) and involvement (degree of engagement/discussion with respect to the educational process and further-educational plans). Where an individuals' parents fell in relation to these groups is determined by whether they were classed as authoritative, authoritarian, neglectful or indulgent. A socioeconomic status composite score was computed from parental educational, occupational and income responses. The results suggest that not only is authoritative parenting more prevalent amongst European Americans (majority group), the positive association between this and academic attainment also only holds true for this group.

El Nokali et al. (2010), on the other hand, investigate the impact parental involvement has on academic and social development. The authors utilise a sample of approximately 1,400 1st grade children sourced from the Study of Early Childcare and Youth Development. In order to conduct their investigation the authors analyse within- and between-child associations using multi-level hierarchical learn models of maternal and teacher reports of parental involvement predicting achievement (reading, Mathematics and vocabulary scores), social skills (Social Skills Rating System[89]) and problem behaviours (parents completed the Child Behavior Checklist[90] whilst parents completed a modified version the Teacher Report Form). Parental involvement was measured separately through a combination of maternal and teacher composite variables based on responses in the 1st, 3rd and 5th grade to modified versions of the Parent-Teacher

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[89] Social Skills Rating System (see Gresham & Elliott, 1990) comprises of two subscales examining children's social skills and academic competence.

[90] The Child Behaviour Checklist (see Achenbach, 1991) measures a child's social competence and behaviour problems.

Involvement Questionnaire[91]. Control variables included ethnicity, maternal age, education, Peabody Picture Vocabulary Test score, average home observation for measure of environment, mother married, maternal employment, income-to-needs ratio, children in household, teacher experience and classroom quality. The within-child findings suggest no association between parental involvement and academic achievement but do find a negative association with problematic behaviours and improvements in social skills. Moreover, the between-child analysis indicated that highly involved parents had fewer behavioural problems and more advanced social skills. These findings hold true if maternal or teacher reports are used.

Lee & Bowen (2006) investigate the role that parental involvement and Cultural Capital play with respect to the achievement gap (measured by reading and Mathematics scores) in a sample of US elementary school children. Specifically, the authors sample consisted of 415 3rd (age 8 to 9) through to 5th graders (age 10 to 11) who completed the elementary school success profile which amounted to 83.5% of the original sample. Study participants all came from one community bordering a major urban centre in South-Eastern United States. The authors tested Bourdieusian assertions that different social groups will differ in Cultural Capital and Habitus: firstly, by presenting correlations amongst the types of parental involvement and academic achievement; second, t-tests and chi-squared statistics were used to examine differences in achievement by parental involvement and other demographic characteristics (e.g. measures of ethnicity, participation in free/reduced price lunch program and parental education). Here the authors capture parental involvement: at home[92], at school[93], homework help, time-management and parental educational expectations. Third, hierarchical regressions were used to examine the association between parental involvement (as well as demographic characteristics) and academic achievement. The results generally support Bourdieu in that types of involvement varied by parents with different demographic traits. For instance, parental involvement at school and parent educational expectations exhibited consistent positive associations but these were disproportionately more likely to be displayed by European American parents. However, contrary to Bourdieu, both parent-child educational discussion and homework help revealed converse associations. The

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[91] This was originally conceived by Miller-Johnson, Maumary-Gremaud & Conduct Disorders Research Group (1995) and included items related to frequency and quality of parent's involvement in their child's educational process.

[92] Parental involvement in the home was computed via factor analysis from items related to discussing educational topics with child, help with homework and managing child's time.

[93] Parental involvement in the school comprised of a composite measure of 6 items related to parent/teacher reports of physically visiting the school.

former was found to exhibit a positive association on achievement for European Americans but negative for Hispanic/Latino parents. The authors explain this by suggesting that Hispanic/Latino parents may only engage in educational discussions with their children if they are struggling. Homework help, on the other hand, was found to exhibit a negative association with achievement for European Americans and positive for African Americans and Hispanic/Latino parents. Here the authors propose that Hispanic/Latino parents might view it as a way to improve achievement regardless of attainment or believe they need to provide extra support so that their children may achieve the same outcomes (deficiencies in Cultural and Social Capital). Time management in contrast was not found to exhibit a statistically significant association.

Hill et al. (2004) investigate the impact that parent academic involvement has on school behaviour, achievement and aspirations. The authors' sample is drawn from a longitudinal study of child development which followed adolescents at three sites in Indiana from the 7th (age 11 to 12) through to the 11th grade (age 15 to 16). The study started when participants entered kindergarten in 1987 and were then followed annually. Their final sample consisted of 463 adolescents which comprises of approximately 79% of the original sample. To conduct the analysis the authors performed SEM which revealed, contrary to expectations, that parental academic involvement (measured by assessments undertaken by a nominated teacher – 21-item parent-teacher questionnaire, adolescents – 8 questions related to parent involvement in educational process and mothers – 2 questions attended school meetings) was not directly related to 9th grade achievement. The authors then used stacked SEM to see if the hypothesized relations (parental involvement related both directly and indirectly to aspirations via school behaviour problems and achievement) were consistent by gender and parental education groups. Multivariate Analysis of Covariance was also used to examine mean differences by parental education groups for each variable (socioeconomic status, parent academic involvement, school behaviour problems – 113 items scale via teacher report form of the child behaviour checklist, achievement and aspirations), and the latent constructs. Interrelations amongst low and high education groups were examined via computation of correlations. Lastly, hierarchical regression following Baron & Kenny's (1986) moderation testing procedure was used to see if the hypothesized pathways were consistent across ethnicity. The results indicate that a negative relationship exists between parental involvement in the 7th grade and 8th grade behavioural problems. In addition to a positive relationship between 7th grade parental involvement and 11th grade aspirations. While no consistent relationship existed between parental involvement and academic achievement by ethnicity, parental involvement was found to have a positive association for African-Americans but not for European-Americans.

In this subsection we reviewed a selection of US-based studies that investigated the importance of parents, their involvement and parenting practices with respect to specific academic, social outcomes and/or transmission of educational advantage. These authors draw their samples from longitudinal studies, largely parental and teacher responses to a battery of questions in childhood. It was also clear that the majority used dimension reduction techniques (factor analysis) to compute at least some of their measures, which along with other controls were then regressed on a range of outcomes in later sweeps. The studies themselves indicate that parents likely play an important role with respect to determining outcomes, e.g. behaviour, educational achievement and socialization process.

2.5.5.2 Personality

Personality is most commonly broken down into the ‘Big Five’, namely: Openness to experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Moreover, Gutman & Schoon (2013) argue that these traits are generally considered less malleable in comparison to other non-cognitive skills, e.g. creativity, metacognitive strategies, motivation, perseverance, self-control, self-perception, social competence and resilience & coping. Importantly, Borghans et al. (2008a) review the potential application of personality research to the field of economics. The authors try to gauge the usefulness of personality as a psychological concept and the stability of its subcomponents with age. After conducting a meta-review, they establish: first, that cognitive and personality traits can be viewed as conceptually distinct; second, there is a discord between how psychologists and economists define personality (e.g. determining motivation through preferences) although both have developed complementary techniques that would improve measurement/validation (psychologists) and lead to the specification of better models (economists); and lastly, rather than being fixed, the evidence suggests that different aspects of personality appear to develop at different rates whilst some aspects appear more malleable than others (particularly at early ages).

A potential criticism of the application of personality psychology to economics is that personality traits and preferences may be situationally specific. In a meta-review by

Almlund et al. (2011), which examines the importance of personality traits with respect to a range of outcomes (e.g. academic, economic success, health and criminal activity), the authors refute this, concluding that non-cognitive predictors often appear as important as cognitive and family background. Moreover, contrary to being fixed by adolescent, specific personality traits and preferences can be influenced by experience and investment. The authors argue that personality psychology could be a fruitful avenue through which policy can address poverty and disadvantage. As they show that education, early childhood inventions and parental investment can affect personality throughout the lifecycle. We now turn to address two recent contributions to this literature.

Cheng & Furnham (2012) investigate to what extent personality traits measured in childhood predict adult occupational prestige. To conduct the analysis the authors utilise a sample of approximately 5,000 participants drawn from the NCDS58. To predict occupational prestige (age 50) the authors used SEM which included not only childhood personality traits but family social status (birth), cognitive ability (age 11), highest educational qualification (age 33) and occupational prestige (age 33). The big five personality traits were assessed (excluding agreeableness as this was found by others not to influence the major variables of interest in this study) by utilising cumulative responses to 50 questions (10 for each) that were asked as part of International Personality Pool (Goldberg, 1999). The results indicate that childhood intelligence (verbal and non-verbal ability), along with education, were the biggest predictors of occupational prestige at age 50. Nevertheless, extraversion, conscientiousness and openness, although modest in comparison, did exhibit statistically significant associations.

Petrides et al. (2005) investigates the link between scholastic behaviour and personality traits on academic performance. The authors utilise a sample of approximately 900 students from a school-based survey (seven institutions), designed to inform on the psychosocial influences on scholastic behaviour and achievement, of year 11 (age 15 to 16) British secondary school children. Data was obtained via teacher administered questionnaire batteries in class whilst additional data was collected from school archives. In order to conduct the main analysis the authors performed multi-group (male and female) structural equation modelling on English, Mathematics and Science scores both at KS3 and GCSE. In addition to including a measure of verbal reasoning test score[94], extraversion, psychoticism and an interaction between verbal ability and extraversion; the authors create two latent constructs called KS3 and GCSE. The authors capture extraversion and psychoticism along with neuroticism (P-E-N Model) through the revised Eysenck Personality Questionnaire (see Eysenck, 1985) which comprises of 48 dichotomous response questions. The results revealed that verbal ability exhibited the strongest association with academic performance (and other behaviours) whilst extraversion and psychoticism were negatively related. The impact of the latter two were however weak in comparison (although might have more of an effect on pupils with homogenous ability) and moderated by gender. For instance, for the female group psychoticism exhibited a stronger negative association whereas for males extraversion exhibited both a direct and bilinear interaction with verbal ability with respect to GCSE performance.

In this sub-section we reviewed two studies that investigated the role personality plays with respect to academic performance and occupational prestige. The studies are consistent with Almlund et al. (2011); indicate that aspects of personality appear to be important with respect to determining educational performance and occupational prestige albeit exhibit a more modest association in comparison to ability. Petrides et al. (2005) also indicates that some of these aspects might be moderated by gender. More generally, personality may be malleable (albeit to a lesser extent than other non-cognitive factors) and personality psychology could provide a fruitful avenue through which policy may address poverty and disadvantage.

2.6 Summary, justification and concluding remarks

In this literature review we make the case for the inclusion of Cultural and Social Capital measures in frameworks used to model HE participation. Specifically, we noted the generally increasing trend in UK HE participation over time, starting from a low base of 5% in the 1960/61 to 42% in the 2015/16 academic year. The scale of this increase is of course likely to have fundamentally altered the social landscape in Britain. We then formalised the HE participation decision utilising HCT. Here we based our understanding on the assumption that individuals will invest in acquiring HE if the net

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[94] Tailor made test developed by Department of Assessment and Measurement at the National Foundation for Educational Research. In total the test was administered three times to each pupil with the score reflecting the average of the two best performances.

present value, is positive. We then discussed to what extent individual and family background characteristics have been shown to affect HE participation by considering some recent contributions to the UK literature. Here we find that, although cognitive ability exhibits the largest association with HE participation, this has however been declining over time, whereas family background characteristics appear to be exerting a growing influence. This finding implies that, despite significant policy effort, those from the wealthiest backgrounds have benefited disproportionately from the expansion in HE.

We then moved on to considering whether returns to HE have changed and whether it still represents a good personal investment. Interestingly, the literature indicates that, despite almost half of young people now participating in HE, the graduate premium has remained roughly constant. However, there has been an increase in the variance of returns across graduates. This would suggest that, although education has the potential to and is found to reduce within-group inequality, further expansion to HE participation would do little to reduce inequality between-groups. Furthermore, we also found evidence to suggest that, in addition to substantial pecuniary benefits, individuals will also accrue significant non-pecuniary benefits (e.g. increased job, life satisfaction and health). Society is also expected to benefit through higher tax receipts, reduced crime, inequality, an increase in political activism, etc. This latter point justifies continued (partial) public subsidisation in HE. Finally, we introduced the concepts of Cultural and Social Capital, arguing for their potential to affect and contribute to the HE participation debate. To support these assertions, we present evidence that suggests that cultural and social influences are associated with HE participation (in addition to ability, socioeconomic background and prior educational attainment) as well as the quality of institution attended. Furthermore, we do also elude to a number of other potential alternate sources of influence, e.g. non-cognitive skills, personality and parenting; whose relationship with Cultural and Social Capital has not been explored in the literature.

As such we believe the forthcoming research is justified because cultural and social influences in a UK HE Participation context have been largely under-explored. We are aware of only a handful of studies in the literature that specifically investigate Cultural Capital influences on UK HE and none for Social Capital. Moreover, other research conducted in the US, and to a lesser extent Scandinavia has already indicated, the concepts of Cultural and Social Capital exhibit independent and significant associations with a range of youth outcomes. We will elaborate on these studies in the forthcoming research, specifically in the literature reviews within our first and second empirical chapters. Furthermore, no study has attempted to include measures for both Cultural and Social Capital. We believe that this is important, because failure to include both is likely to bias estimates, leading to erroneous inferences. It is also important to anticipate here that our study also makes a series of methodological contributions with respect to the way in which we operationalise our proxies for Cultural and Social Capital. As such, we believe that our studies have the potential to unlock new insights and potentially lead to the development of more cost-effective ways to raise HE participation amongst traditionally harder to reach groups.

In the remainder of this thesis we conduct our own research into the role of Cultural and Social Capital influences on UK HE participation. We group our contributions into three empirical chapters. Our first empirical chapter uses two historic British birth cohort studies, tracking individuals born in 1958 and 1970, to construct and include relatively simplistic measures of Cultural and Social Capital to determine their association with HE participation. In the second empirical chapter, we utilise a more recent dataset. We focus on HE participation by age 20 and integrate our framework with additional measures of Habitus and two additional contextual sources of Social Capital, at home and at school. Our last empirical chapter takes this a step further by employing a multi-level modelling framework to investigate whether school attended exhibits independent associations with the likelihood of HE participation.

3. FIRST EMPIRICAL CHAPTER

“*Do cultural and social influences affect progression into Higher Education? An analysis using two British birth cohorts (NCDS and BCS70).*”

3.1 Introduction

This chapter explores whether cultural and social influences are associated with the likelihood of future HE participation across two British birth cohort studies. Past research using these and other sources of data has shown that individual and family background characteristics exhibit significant associations (Blanden & Gregg, 2004; Blanden & Machin, 2004; Galindo-Rueda et al., 2004; Galindo-Rueda & Vignoles, 2005). Moreover, research points to family background characteristics playing an increasing important role in determining participation in HE (Blanden & Machin, 2004; Galindo-Rueda et al., 2004; Galindo-Rueda & Vignoles, 2005). In conjunction with increasing generally increasing UK HE participation rates, these findings imply that HE expansion has disproportionately benefited higher income groups. In the prior literature review we argued that cultural and social influences are also likely to affect HE participation. Moreover, mostly US based studies have found significant associations with a range of youth outcomes. Although, we argue that structural differences between the UK and US educational systems may render these findings non-transferrable.

In this chapter we present evidence that shows that the incorporation of measures of Cultural and Social Capital, which we use as a proxy to capture cultural and social influences, are significantly associated with an individual’s likelihood of future HE participation. This is important because these additional influences are likely correlated with family background characteristics, positively biasing their impact. As such, we believe exploration of cultural and social influences offers a promising avenue of research. Lastly, our study also makes a methodological contribution through the way in which we operationalise Cultural and Social Capital.

This chapter is structured as follows: Section 3.2 reviews and informs the reader about a selection of contributions to the Cultural and Social Capital literatures. Here we pay particular attention to how previous research has defined, operationalised and measured Cultural and Social Capital. In section 3.3 we present the data and our analytical approach. Additionally, in section 3.4 we describe our estimation samples, detail our main findings and discuss. Section 3.5 concludes.

3.2 Literature review

In this section we begin by reviewing a study that we found useful with respect to operationalising our own capital measures. Then discuss a selection of contributions to the Cultural and Social Capital literatures. The aim here is to both inform the reader about how previous authors have operationalised the concepts and contextualise our later findings. For conciseness we only review those studies that relate broadly to youth outcomes and were published in the last two decades. The majority of these studies were conducted on US data and investigate whether Cultural and Social Capital are associated with a range of youth outcomes.

Vryonides (2007) model the cultural and social influences on student achievement and post-secondary school choices in Cyprus. Specifically, the author surveys 450 students completing secondary school whilst also conducting 28 interviews that are more detailed with parents. He employs mixed methods to analyse the responses on two levels, the individual and their parent, in order to capture different elements of an individual's Cultural and Social Capital. Vryonides presents correlation coefficients (for educational aspirations, literature, cultural activities, cultural/educational objects, occupational status, gender, effort and achievement) and regression coefficients for three models (with standardised dependent variables). To capture Cultural Capital, the author includes questions relating to engagement in cultural activities[95], cultural and educational resources in the home[96] and the number of works of literature read in the last year by the student. To capture Social Capital in the family, the author includes the following question in the student survey: "How do you expect your family to help you find employment?". Possible answers to this reflected inter-family networks, Economic Capital and parental involvement. The author presents a table of standardised regression coefficients for three models of student achievement. Model 1 regresses student achievement against whether the student reads literature, attends cultural activities and whether they own educational objects. Model 2 adds gender and social class origin. Students' effort is included in model 3. Qualitative techniques were then used to analyse

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[95] Cultural activities included: attending the theatre, museum, concert, art gallery and public lectures.

[96] Cultural and education resources in the home included: whether the child has access to a personal computer, internet, encyclopaedia, library and authentic artwork.

survey responses with respect to post-secondary school choices. Overall, the findings suggest that Cultural Capital offers no clear educational advantage, but may have an indirect effect on intellectual development. Specifically, Interest in literature and cultural/educational objects were also found to exhibit positive and significant associations with achievement but not cultural activities. What is also clear from the results is that Social Capital in the family is important in shaping the aspirations and occupational expectations of students. However, the mechanism is undoubtedly complex. The author concludes by noting that operationalising these concepts quantitatively using current methodologies does not fully capture social dynamics. Arguing that, in addition to quantitative methods, qualitative methods should be employed to understand these dynamics more fully.

3.2.1 Cultural Capital literature

We begin our review of the Cultural Capital literature with Kalmijn & Kraaykamp (1996). The authors investigate the association between racial inequality and schooling in addition to whether ethnic cultural exclusion has occurred over time. To conduct the analysis, the authors derive a sample from the US Survey of Public Participation in the Arts[97] (SPPA), which was undertaken in conjunction with the National Crime Survey. Specifically, those individuals (specifically black or non-Hispanic white people aged 25 and over) selected to participate in the 1982 or 1985 sweeps were surveyed. Kalmijn & Kraaykamp operationalise parental Cultural Capital by using the un-weighted average score derived from four variables: whether parents attended classical music performances, plays, art museums and whether they encouraged the participant to read. Two sets of models are estimated using multivariate analysis. The first of which models the determinants of parental Cultural Capital, whilst the second set years of schooling completed. The authors control for parental schooling, cohort, race, parental education, rural residence, gender and select interactions. The results show that Arts participation has a positive association with schooling. They also reveal that parental cultural resources and years of schooling for both black and white people have increased over time between 1900 and 1960, but this increase has been faster for black people. The authors conclude therefore that there has been a convergence in years of schooling completed between black and white people.

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[97] The SPPA was conducted on a subset of households surveyed in the larger National Crime Survey. Specifically, one in twelve National Crime Survey households were asked to respond. Participants were asked an additional question set relating to the frequency of Arts participation in the last year.

Aschaffenburg & Maas (1997) investigate whether Cultural Capital is associated with educational transition in the US. Similar to Kalmijn & Kraaykamp (1996), the authors utilise the SPPA, a sample of those drawn from the 1982, 1985 and 1992 sweeps. To conduct the analysis, the authors estimate four sets of logistic regressions (calculating odds ratios) for four educational transitions: early-years education through to high school, attending high school through to completion, high school completion to college attendance and college attendance through to graduation. The authors construct measures of both the parents' and participant's Cultural Capital. Specifically, parental Cultural Capital is operationalised through a composite measure of average participation across four activities: listening to classical music or opera, visiting art museums/galleries, attending performances and encouraging the participant to read. For participants, Cultural Capital was operationalised: firstly, by whether they took lessons in one of five cultural domains. These were music, visual Arts, performance, appreciation and history for Arts and Music separately; secondly, by the context in which these lessons took place, i.e. school, outside of school or both. The authors control for gender, age, race and include separate variables for father's and mother's education. The results reveal that Cultural Capital (both child and parents') is positively associated with the likelihood of educational progression at each stage. They also observe a declining impact of Cultural Capital for each subsequent educational transition, particularly for parental measures of Cultural Capital. Context also appears to matter, with cultural lessons outside school exerting a larger impact. They do, however, note a resurgence of a stronger positive Cultural Capital association with college attendance. Stating that this resurgence probably reflects the college application process.

De Graaf et al. (2000) attempt to refine the Cultural Capital perspective by exploring the role of parental Cultural Capital on educational attainment in the Netherlands. To conduct the analysis, the authors utilise a sample of 1,000 18 to 64 year old residents and their spouses derived from the Netherlands Family Survey Registry[98] in 1992. OLS is used to estimate five models of children's educational attainment, measured in years. The authors include controls for cohort, gender, single parent household, parental education, father's occupational status and household income. Specifically, they operationalise parents' Cultural Capital through two sets of five variables relating to

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[98] The Netherlands Family Survey is a multi-stage survey, designed to capture information on a range of characteristics for a representative sample of Dutch nationals and their spouses.

parental Arts participation[99] and reading habits[100]. Mean scores were used to create three within-cohort ranking indices. The first combined all 10 variables, whereas the remaining two contained only five variables relating to either parental Arts participation or reading habits. The results indicate that higher parental Cultural Capital is positively associated with later child educational success, particularly amongst those from lower socioeconomic backgrounds. Indeed, Cultural Capital appears to be a more important determinant than familial background with respect to educational attainment in the Netherlands. De Graaf et al. (2000) propose two mechanisms which could account for this. The first is based on the intergenerational transfer of educational skills from parents to children and the other is based on the replication of the school cultural climate in the home.

Sullivan (2001) assesses the implications of CRT. They do this by examining the distribution of Cultural Capital by class and educational level, intergenerational transmission (noting observable differences by gender) and its association with GCSE attainment in the UK. The author utilises responses from four school-based surveys[101] of British final year school pupils in 1998 (age 15 to 16), supplemented later with their respective GCSE examination results. The author operationalises the young person's Cultural Capital by scoring a young person in three cultural dimensions: leisure activities (reading habits, programmes watched, music listened to, attending galleries, theatre or concerts), knowledge of cultural figures (test of famous people) and language (active and passive vocabulary scores). Parents' Cultural Capital was operationalised by asking the young person to comment upon their parents: reading, music listening habits, public events attendance and topics discussed in the home. For the main analysis the author estimates four linear models to determine the influences on pupils' cultural activities, language score, knowledge score and GCSE attainment. These models control for parental qualifications, social class, students' gender, school dummy, parents' and students' cultural activities, cultural knowledge and vocabulary. The results provide strong evidence to suggest the existence of differences in Cultural Capital endowments by social class and parental education. Furthermore, the findings broadly support the intergenerational transmission of Cultural Capital, with this contributing positively to

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[99] Parental Arts participation included: visits to art galleries, museums, opera or ballet performances, theatrical performances and classical concerts.

[100] Parental reading habits included: regional or historic novels; thrillers, Science or war novels; Dutch literature; translated literature; and finally literature in a foreign language.

[101] The participants were drawn from four comprehensive schools, two of which are single-sex. In total 465 surveys were adequately completed, yielding a response rate of 83.5%.

educational attainment at GCSE. Nevertheless, social class and gender remain significant, even after controlling for Cultural Capital. CRT, therefore, only appears to offer a partial explanation.

Dumais (2002) investigates the associations between Cultural Capital, gender and school success of 8th grade students (age 13 to 14) from the NELS in the US. The sample is limited to white people, to avoid complex interactions between culture and ethnicity. To conduct the analysis, the author utilises a mixture of econometric techniques, namely OLS with and without metric coefficients and fixed effects, to produce pooled within-pupil regression estimates. Unlike the other studies mentioned, a measure of Habitus is included. This is captured via a dummy based on a student's future occupational expectation. Cultural Capital is operationalised using a variable which reflects the sum of parental responses confirming their child's participation in six cultural activities. Namely, participation in: art, music, dance lessons, attending concerts/other musical events, visiting museums and reading (whether borrowed books from the public library). The author also controls separately for gender, socioeconomic status, cognitive ability and Grade Point Average (GPA). The results reveal that ability, as expected, plays the most significant role with respect to educational attainment. Interestingly, Habitus is shown to have a larger association than Cultural Capital. Nevertheless, the Cultural Capital association does appear to vary by gender. For instance, Cultural Capital is shown to exhibit a smaller positive association for young women, whereas for young men they find the opposite albeit only significant in the fixed effect specifications. The author hypothesises that young men may downplay their Cultural Capital in order to avoid looking effeminate in the eyes of their peers, whereas young women may emphasise it in order to gain more support from teachers (teacher-selection effect).

Kaufman & Gabler (2004) investigate the role that extra-curricular activities play with respect to the probability of attending college or university in the US and whether it is classified as elite. The authors classify an institution as elite if it features in one of four groups in the 1992 US News and World Report's guide to colleges; namely the 25 top-ranked or competitive colleges and universities. Specifically, the authors test four theoretical propositions: Credentialing[102], Cultural Capital, Socialisation[103] and HCT. To

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[102] Credentialing was developed by Collins (1979) and differs from Cultural Capital Theory in that an individual need only appear to have cultural qualities and traits without actually possessing them.

[103] Socialisation implies that an individual's proficiency with culture ensures that they have made a sufficient commitment to social norms and values incorporated within the educational system.

conduct the analysis, the authors utilise a sample derived from the NELS, specifically those responding to the 1988, 1990, 1992 and 1994 sweeps. For similar reasons to Dumais (2002), they limit their sample to white people to avoid complex interactions between culture and ethnicity. Specifically, Kaufman & Gabler (2004) operationalise Cultural Capital through the inclusion of a series of dummy variables relating to parental, child or joint participation in art, music and dance lessons outside of school. Further variables were included which indicated if parents, their child or both together took part in or visited: the public library, music concerts/events and art museums; in addition to if the child took music, art, language or dance classes outside of school. Lastly, whether the child participated in a number of extracurricular activities within school[104]. Methodologically, the authors estimate probit models (with robust standard errors to address data clustering by school) in order to estimate the probability of HE participation. They include the following controls: socioeconomic status, gender, parental involvement in school life, self-esteem, school poverty, English fluency, standardised test scores, grades and rural variables. These models were also estimated separately by gender to capture any gender-specific differences. From the results, they find that participation in various activities and/or classes increases an individual's probability of attending college by bolstering educational attainment. This association is stronger for those aged between 15 and 16. Participation in and training in the Arts by the participant does not, however, lead to a higher probability of attending elite colleges, although a parents' interest in the Arts does.

To summarise, it is clear from the studies we reviewed that most researchers elected to operationalise Cultural Capital through Arts, cultural participation and reading habits. There were, however, a few exceptions: Dumais (2002) makes the distinction between 'low' and 'high-brow' cultural activities. Aschaffenburg & Maas (1997), alternatively, opt to operationalise the concept via cultural participation. Lastly, Sullivan (2001) makes provision to incorporate cultural knowledge and language in addition to Arts participation. Most authors, with the exclusion of Kaufman & Gabler (2004) - who include a series of dummy variables, include a composite measure in their empirical analysis which represents either a ranking within the reference cohort, an average score for participation or engagement in a range of activities.

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[104] These related to: interscholastic team and/or individual sports, school team and/or sports, team support vocations (e.g. cheerleading), playing musical instruments, theatrical performances, student government activities, academic honour societies, journalism, service exchange clubs, subject-specific societies and general interest clubs.

The evidence presented indicates that Cultural Capital has a positive association with youth outcomes. We did however note some significant differences by gender (Dumais, 2002). Concerning gender, Cultural Capital association appears stronger for females. With respect to ethnicity, cultural resources were found to narrow the attainment gap between black and white young persons from the 1900s to 1960s. For instance, Aschaffenburg & Maas (1997) present evidence that indicates Cultural Capital has a declining but positive association each subsequent educational transition (excluding college). Moreover, Kaufman & Gabler (2004) present evidence which implies that individuals with more Cultural Capital are able to better distinguish themselves raising their likelihood of being accepted at an elite institution. Aside from demonstrating that Cultural Capital has a positive association with attainment, De Graff et al. (2000) also find that this is stronger than that exhibited by family background. Nevertheless, it is important to note here that their study was conducted in the Netherlands which is a more egalitarian country, compared to the US or UK. Lastly, Sullivan (2000) also presents evidence to suggest that Cultural Capital may facilitate upwards mobility for individuals from poorer backgrounds which supports DiMaggio's (1982) Cultural Mobility hypothesis.

To conclude, we have presented evidence that Cultural Capital (with and without Habitus) has a positive association with various educational outcomes. Parental Cultural Capital also appears to be initially influential but declines in importance with each educational transition, up until but not including HE. What should however be clear from these contributions is that a more thorough comprehension of cultural influences in a UK context may have the potential to contribute to better understanding UK HE participation. Particularly when we consider that most of the research was conducted in the US and evident structural differences between the educational systems[105].

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[105] The US HE sector has a number of features that distinguish it from that of the British system: firstly, the US has a higher prevalence of sport-related scholarship programs. These may be instrumental with respect to the formation and value of Cultural or Social Capital. Secondly, historically US student fees are much more differentiated and could be multiples of what British students would then of had to pay. Thirdly, the student loans system in the US is less equitable than the British system. Fourthly, students in the US are ranked based upon a measure of average performance, i.e. GPA. This contrasts with British students who are judged largely on their results of high stakes exams at age 16 and 18. Lastly, the UK operates a pre-examination, system, i.e. namely, students typically apply at the age 18, and before their A-level results are announced. Offers by institutions are sent before results are released and then confirmed, conditional upon satisfactory exam performance.

3.2.2 Social Capital literature

In this subsection we purposely limit this review to include only those studies relating to youth outcomes, published in the last couple of decades and up until Parcel & Dufur (2001). We justified this choice on the grounds that Parcel & Dufur (2001), arguably, marked the start of trend in the literature (Dufur et al., 2015; 2013a; 2013b; Hoffman & Dufur, 2008; Crosnoe, 2004) to differentiate Social Capital into separate contexts; namely at home and at school. We address this distinction in the next empirical chapter, as the NCDS and BCS70 do not make adequate provision to distinguish Social Capital by context.

Stanton-Salazar & Dornbusch (1995) investigate how US high school students of Mexican-origin derive various types of institutional resources and support at school. The authors are particularly interested in how parental social status, students' grades and educational and occupational expectations are related to the strength of social ties between pupils, teachers and guidance counsellors. The authors use stratified samples from two school-wide surveys conducted during the 1987/88 academic year. Semi-structured interviews were used in order to establish the students' social support networks in relation to four main areas: peer interaction/recreation, emotional crisis, social material and informational support. The surveys also recorded names and demographic information of the young person's friends. This information was used to construct five measures of Social Capital, these were: the number of high status adults named as likely sources of information, number of non-familial weak ties, school-based weak ties, people actually relied upon for academic guidance or support and average socioeconomic level of students' network. The authors then analysed the responses using OLS on these five alternative measures of Social Capital. Controls were included for social class, language proficiency, grade year (proxy for age), self-reported GPA, educational and occupational expectations and post-high school plans. The findings indicate the existence of a relationship between socioeconomic status, language proficiency and the five measures of Social Capital. The relationship exhibited by socioeconomic status does, at times, appear inconsistent. On the other hand, language proficiency was found to exhibit the most consistent association; for instance, being bi- or multi-lingual seemed to facilitate access to information, opportunities and engagement with high status contacts.

Much of the work in the Social Capital literature has focused on measuring disadvantage. Relatively few works explore how disadvantaged individuals achieve upwards mobility. Furstenberg & Hughes (1995) contribute to the debate by investigating how family-based and community-based measures of Social Capital affect a range of outcomes for disadvantaged black African-American youths between the ages of 18 to 21. Outcomes related to graduation from high school, college enrolment, labour force participation, social status, incidence of teen pregnancy (females only), criminal activity (males only) and mental health. To conduct the analysis the authors utilise a longitudinal sample of 252 black African-American individuals born in the city of Baltimore[106] from school-aged mothers. The authors operationalise family-based Social Capital by including variables relating to three aspects: extended family exchange and support, maternal monitoring and parental investment in the child. Family links to the community were operationalised using a number of measures[107] reported by the child. The authors' analysis consisted of three stages: first, the authors estimate whether their measures of Social Capital relate to any of the seven outcomes; second, the authors re-estimate the models including two measures of family Human Capital (mother's education and social class). This was necessary in order to assess whether the influences of Social Capital on the outcomes was attenuated through the addition of familial Human Capital; the last stage tested the causal nature of the influences of Social Capital on an alternate but related set of outcomes. The results reveal that Social Capital is positively associated with social mobility for disadvantaged youths. Moreover, rather than being a singular concept, Social Capital appears to be contextual, whilst its value appears to be contingent on the outcome being observed.

Teachman et al. (1996) contributes to the debate by examining how various measures of Social Capital affect rates of dropout from US high schools between grades 8 (age 13 to 14) and 10 (age 15 to 16). The authors utilise a sample of NELS participants featuring in the 1990 and 1992 sweeps. Four models (with multiple specifications) were estimated: in the first case, odds ratios were derived from a logistic model with respect to the probability of parents knowing the parents of their child's friends. OLS regression was

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[106] The Baltimore Study is a longitudinal study of young mothers and children domiciled to the city of Baltimore in the state of Maryland, US. The study began in the mid-1960s with 404 black African-American school-aged mothers attending a specific hospital. Sweeps were carried out at the ages of 1, 3, 5, 15 to 17 and between the ages of 18 and 21.

[107] These variables are: religious involvement (index formed from two variables), strength of help network, see close friends weekly, child ever changed schools due to a move, friends' educational expectations, quality of school (four point scale formed from six variables) and neighbourhood as a place for children to grow up.

then used for the remaining three. The dependent variables here are: number of times changed schools, parent-school and parent-child connectivity. The last two are derived using PCA on variables reported by both the parent and child. Parental variables related to whether they and their spouse/partner talked to the young person about their experiences in school, plans for high school, educational plans after high school, number of times the school contacted parents and reported participation in school. The variables reported by the child were: discussion topics with parents since the beginning of the school year and parental participation in school. Other Social Capital variables included in the regression related to attendance of Catholic schools, number of times changed schools and family structure. Broadly, the findings suggest that the negative association observed between Catholic school attendance and high school dropout is almost entirely explained by parental connectivity and number of times the young person changed schools. The association exhibited by family structure, however, remains largely unchanged with family background remaining important throughout.

An interesting avenue of Social Capital research involves the use of diary data. Bianchi & Robinson (1997) seek to provide a clearer understanding of the interaction between family characteristics and parent-child interaction. Specifically, they investigate four aspects: mothers in the workplace, one versus two-parent households, household size and parental education. To conduct the analysis, the authors utilise state-wide California time-diary data. Diary information was obtained directly from children aged 9 to 11 whilst diaries for younger children (those between the ages of 6 to 8) were completed by their parents[108]. The authors proceed to estimate four Tobit models to determine the influences on four activities: reading, watching television (TV), studying and housework. Bianchi & Robinson control for gender, whether or not the child is in a minority ethnic group, child's age, weekend diary day, summer interview, parental educational achievement, banded family income, single parent household, mother's labour force status, number of children and birth order. The diary data itself revealed that watching TV accounted for more of the children's leisure time than reading. In fact, almost 90% of children watch TV as part of their daily leisure-time activities. Moreover, the results also indicated that a negative association exists between highly educated parents and their child watching TV. These parents also appear to encourage their children to read and study more. Lastly, the results also revealed minimal differences

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[108] In total 1,200 eligible participants were interviewed with a response rate of 78%.

between the four activities with respect to household composition, whilst children of mothers who work part-time, on average, watch less TV.

Hofferth et al. (1998) investigate how the provision of extra familial resources is associated with a range of educational outcomes in the US. They contribute to the literature by exploring how both neighbourhood and parental involvement is associated with their child's schooling. To conduct the analysis, the authors utilise a restricted sample of 901 black- or white-only American children derived from the PSID. The authors construct their measure of Social Capital using a range of variables which relate to: receipt of pocket money, time spent with family and, separately, characteristics of the local neighbourhood. Family level measures included: family structure, race and a cohort identifier. The socially isolated, namely those who did not have access to monetary or time assistance from friends or relatives, were used as a control group. Additional controls were included for maternal years of schooling completed, ratio of family income to needs, economic status, geographic mobility and a black/white dummy variable. The authors' econometric approach consisted of three sets of regressions. The first used OLS to assess the role of parental access to help on years of schooling completed by age 22. The second and third, used a logistic model to estimate the influences on the probability of completing high school and, separately, college attendance. Each set is estimated three times, first using the entire cohort and then the two subsamples for those whose income-to-needs ratio is above or below three[109]. The findings suggest both access to time or financial help from friends has a positive and statistically significant association with the number of completed years of schooling for high income individuals. However, this has a negative and non-significant association for low income individuals, which suggests a disparity between the impact of Social Capital by economic status. However, no statistically significant relationship was found between access to help or money from relatives and completed years of schooling. A similar pattern was found with respect to receipt of emergency finance. Residential mobility also appears to have a favourable impact on high income families, whilst having the opposite effect for low income households. Moreover, the logit results suggested that, contrary to years of schooling completed, access to help or money from non-familial contacts is not important for high school completion but does appear important for college attainment.

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[109] The income-to-needs ratio is given by the average of family income divided by the corresponding poverty threshold, between the ages of 11 and 16.

McNeil (1999) attempts to provide clarity on some inconsistencies highlighted in the Social Capital literature. These inconsistences relate to parental practices and their association with various academic outcomes, i.e. academic achievement, truancy and dropping-out. Specifically, the author investigates how parental practices vary across socioeconomic demographics and their association with academic outcomes. The author utilises two samples derived from the NELS. The first sample comprises of a sample of individuals who appear in the 8th (age 13 to 14) and 10th (age 15 to 16) grade sweeps. The second sample was more restrictive, requiring participants to have also responded in the twelfth grade (age 17 to 18). The author constructs their measure of Social Capital by employing PCA on 15 variables. The variables broadly relate to involvement in their child's schooling at 8th grade[110]. The author extracts four components and calls them: parent-child discussion, Parent-Teacher Organisation (PTO) involvement, monitoring and educational support strategies. The author utilises OLS for academic achievement, whereas for truancy and dropout, they use a logistic model. McNeil controls for ethnicity, single parent, gender, an index of socioeconomic status (comprised of both father's and mother's occupational status, education and family income), base achievement tests, the child's GPA, aggregate homework and employment hours per week. The findings suggest that greater parental involvement appears to be a prominent factor in explaining incidents of problematic behaviour but not cognitive outcomes. The results do also suggest a degree of heterogeneity with respect to Social Capital by race, household structure and socioeconomic status.

Parcel & Dufur (2001) contribute to the debate by investigating the association between different contextual sources of Social Capital and US student Mathematics and reading scores. By context, they refer to spheres of a young person's life, e.g. Social Capital which is accumulated at home and Social Capital which is built at school. The authors utilise a cohort of young people derived from the US National Longitudinal Survey of Youth[111] 1997. Specifically, merged child and mother data from first grade (age 6 to 7) through to 8th grade (age 13 to 14). The authors opt to operationalise Social Capital at home using six elements (all measured in 1994): the home environment, mother's

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[110] The variables are: discuss with parents school program, activities, things studied in class, high school plans with the father and separately with the mother, whether their parents belong to a PTO, attend PTO meetings, take part in Parent-Teacher Organisation activities, volunteer at the school, parents regularly check homework, insist chores are completed, limit television viewing, attend school meetings, talk to teachers/counsellors and visit classes.

[111] The US National Survey of Youth is a national longitudinal study of a representative sample of 9,000 US young people, born between 1980 and 1984. School variables were added to the survey in 1993/94 and 1995/96.

knowledge of child's friends and location, church attendance, number of children, parental marital status and working hours. Social Capital at school is operationalised via: type of school (whether state-run, private or religious), teacher-student and counsellor-student ratios, school social problems, school physical environment, parent-teacher communication and parental involvement in school. Analytically, the authors estimate two sets of five OLS regressions to determine the influences on Peabody Individual Achievement Test (PIAT) test scores for Mathematics and reading. Each set initially controls for prior PIAT score. To these a staggered set of controls is then added; namely, controls for family Social Capital, school Social Capital, household Economic Capital and gender. Lastly, interactions are then added to determine the extent of multiplicative, threshold and compensating effects. The results reveal that, as expected, parental and child Human Capital is significantly associated with academic achievement. Furthermore, some differentiation by gender is also apparent, with girls seeming to benefit more than boys (in terms of academic achievement) from having a more able mother (as measured by higher Armed Forces Qualification test scores). The authors hypothesise, based on their results, that Social Capital at home and at school work in parallel to either increase or decrease Mathematics and reading achievement. They find no evidence to suggest that family Social Capital serves in a facilitation capacity to convert family Human Capital into achievement, although the authors are unable to determine which Social Capital context is most effective.

To summarise, we can observe that researchers have adopted a variety of approaches to operationalise Social Capital. For example, Stanton-Salazar & Dornbusch (1995) focus their operationalisation on student social support networks, whereas Teachman et al. (1996) incorporate a measure of residential mobility. Hofferth et al. (1998) are somewhat unique in measuring the resources available to an individual through their social networks directly, i.e. monetary or time assistance from family and friends. Separately, most either include Social Capital indicators directly within the regressions (see Stanton & Salazar, 1995; Bianchi & Robinson, 1997 and Boisjoly et al, 1998) or use composite measures (see Furstenberg & Hughes, 1995; Teachman et al., 1996; McNeil, 1999; Parcel & Dufur, 2001).

To recap, Stanton-Salazar & Dornbusch (1995) indicates the existence of a positive relationship between family background, language proficiency and measures of Social Capital. Hofferth et al. (1998) found that access to time and financial help from friends exhibits a positive association with completed years of schooling for high income groups. For low income groups the association was negative but not significant. However, Furstenberg & Hughes present evidence indicating that Social Capital appears to aid social mobility amongst disadvantaged youths, suggesting the presence of a substitution effect. Moreover Teachman et al. (1996) and Hofferth et al. (1998) suggest that parent-child discussion with respect to schooling reduces the incidence of dropout and separately increases educational attainment. Along a similar theme Bianchi & Robinson (1997) present qualitative evidence which seems to imply that more educated mothers are more likely to actively manage and intervene in their child's development. Lastly, Parcel & Dufur (2001) find that Social Capital acquired in different contexts, namely at home and at school appear to work in parallel to either increase or decrease Mathematics and reading achievement.

We conclude this section by noting that there is evidence to suggest that Social Capital exhibits context-specific characteristics. Nevertheless, language(s) spoken appears to be particularly influential with respect to the size and value of social networks. There also appears to be a positive link between parental education and the quality of the home learning environment. We also note a disparity between the likely impact of Social Capital by economic status. For example, social connections benefit outcomes for individuals originating from more advantaged backgrounds whereas these have been found to be either insignificant or to exhibit a negative association for those originating from disadvantaged backgrounds. We should emphasize again that many of the aforementioned Social Capital studies were conducted in the US. This is important, as these findings may not be directly transferable, due to structural differences between UK and US educational systems.

3.2.3 Summary

Our review of these contributions to the Cultural and Social Capital literatures reveals the potential of these influences to contribute to better understanding UK HE participation. For example, Cultural Capital appears to offer a route for social mobility for disadvantaged individuals (see Kalmijn & Kraaykamp, 1996; Aschaffenburg & Maas, 1997). On the other hand, the selection of contributions we reviewed from the Social Capital literature indicate that social networks appear to exhibit differential associations by socioeconomic status (see Bianchi & Robinson, 1997; Hofferth et al. 1998; and McNeil, 1999). Specifically, social networks appear to be of some benefit with respect to achieving desirable youth outcomes for individuals originating from more advantaged backgrounds. In contrast, for those originating from less advantaged backgrounds, the association either proved insignificant or appeared to be negative. Our review of the literature also revealed that there is considerable debate surrounding the operationalisation of Cultural and Social Capital. Considering Cultural Capital, for instance, researchers do not consistently use parental (De Graaf et al., 2000), the child's (Vryonides, 2007) or both (Aschaffenburg & Maas, 1997; Sullivan, 2001; Dumais, 2002; Kaufman & Gabler, 2004) sets of responses to operationalise this concept. Most researchers draw on Arts and cultural participation to do so. However, as most studies use secondary data in their analysis, their choice will likely be constrained by what is asked and who was questioned during data collection. In the next section we turn our attention to discussing the data sources we use and elaborate on our analytical approach.

3.3 Methodology

In this study we seek to establish whether measures of Cultural and Social Capital are significantly associated UK HE participation. We begin by discussing the British birth cohort studies which we conduct our analysis on and then outline our modelling procedure.

3.3.1 Data

To conduct our analysis, we use two British birth cohort studies the National Child Development Study (NCDS) and the British Cohort Study (BCS70). Both studies were sourced from the UK Data Archive. We choose these data sources as they have been extensively used in the literature to investigate HE participation and therefore will serve as a useful point of comparison. They are also two of only a handful of nationally representative longitudinal surveys that contain sufficient detail to conduct the types of analysis we propose. It could be argued that it would have been potentially more interesting to investigate the influences for a more recent cohort. However, no other British cohort study was initiated until the MCS. Alternatively, we could have opted to use a number of pseudo-cohorts derived from the BHPS, as do Blanden & Gregg (2004), Blanden & Machin (2004; 2013) and Machin & Vignoles (2004). We, however, reject this due to sample size[112].

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[112] In their analysis, Blanden and Machin (2004) derive a sample of 5,706 from the NCDS and 4,706 from the BCS70. However due to the panel nature of the BHPS, the authors are only able to utilise a sample of 580 observations.

The NCDS began with a Perinatal Mortality Survey in 1958 (PMS58). The survey was subsequently expanded with additional follow-up sweeps, with the participants referred to as NCDS cohort members. The PMS58 was sponsored by the National Birthday Trust and consisted of a study of the 17,000 babies born in a week in March 1958 in England, Scotland and Wales. These were supplemented by approximately 1,500 observations in sweep 3 of non-UK born permanent immigrants. No additional attempts were made to incorporate individuals after the third sweep (age 16). Full follow-up surveys were then conducted roughly every 6 to 7 years, when individuals were aged: 7 (1965), 11 (1969), 16 (1974), 23 (1981), 33 (1991), 42 (2000), 46 (2004), 51 (2009) and 55 (2013). The next scheduled sweep is due to occur in 2018, when NCDS cohort members will turn 60.

After the PMS58, the focus of the subsequent sweeps moved beyond childbirth and the factors associated with it to economic circumstances, employment, family life, health and behaviours; wellbeing, social participation and attitudes of participants in later life. Procedurally, the PMS58 was completed by the midwife (who had full access to the medical records) after an interview with the mother. Information recorded in sweep 1 (age 7) to sweep 3 (age 16), was obtained from four main sources: the NCDS cohort members themselves, their parents, local authority medical officers and schools. As you might expect a transition was made at this age from surveying parents or guardians in sweep 3 to the participant themselves in sweep 4. Interestingly, sweep 5 also contains responses from a cohort member's husband/wife/cohabitee. Furthermore, in a third of cases the cohort members natural or adopted children were also surveyed. Operationally, sweeps 1 to 4 were carried out by the National Children's Bureau, with the fifth carried out by the Social Statistics Research Unit at City University.

A further perinatal mortality survey, which occurred in 1970 and was initially named the British Birth Study (BBS), marked the start of the BCS70. BCS70 cohort members, like NCDS cohort members, were then tracked through time via additional sweeps. The BBS70 was sponsored by the National Birthday Trust Fund with co-sponsorship from the Royal College of Obstetricians and Gynaecologists. Specifically, the BCS70 started with the BBS survey of 17,200 babies born in a week in April 1970 in England, Scotland, Wales and Northern Ireland (although these participants were later dropped from the sample). Original participants in the BBS70 were supplemented in sweeps 1 (age 5) and 2 (age 10) by approximately an additional 1,500 non-UK born permanent immigrants. Again, no attempt was made to include additional individuals after sweep 3 (age 16).

Full follow-up surveys were then conducted roughly every 4 to 5 years, when individuals were aged: 5 (1975); 10 (1980); 16 (1986); 26 (1996); 30 (2000); 34 (2004); 38 (2008), 42 (2012) and 46 (2016).

As happened with the NCDS, follow-up sweeps 1 to 5 for the BCS70 moved beyond the social and obstetric factors associated with early death or abnormality around birth to collect information on the cohort member's health, educational, physical and social development and economic circumstances in addition to other factors in later life. Procedurally, the BBS70 consisted of a form filled out by the midwife and a three-part questionnaire. Part one was normally completed by the midwife (after an interview with the mother post-birth), part two was completed from personal records and experience, whereas part three related to the first 7 days after birth (some of which was in diary format). Information recorded in sweep 1 (age 6) to sweep 3 (age 16), on the other hand, was obtained from four main sources: the children themselves, parents, local authority medical officers and schools. Similarly, sweeps 3 and 4 in the BCS70 also marked a transition of the main respondents changing from the parents/guardians to the cohort members themselves. Unlike the NCDS, sweep 4 in the BCS70 (age 26) consisted of a 16 page postal survey of cohort members which had a poor overall response rate. Sweep 5, on the other hand, reverted back to an interview and self-completion exercises with a trained interviewer. This has been attributed to uncertainty about the continued funding of the study. Operationally, the first two sweeps of the BCS70 were carried out by the Department of Child Health, Bristol University. The third sweep was conducted by the International Centre for Child Studies (which has an office in London), with the fourth run by the Social Statistics Research Unit, City University. Since 1998 the NCDS and BCS70 from then on were managed and conducted by the Centre for Longitudinal Studies, based at the Institute of Education at the University of London. These were, for the most part, funded by the Economic and Social Research Council. We now move on to discuss in detail which sweeps we use for our analysis and our reasons for their inclusion.

For the NCDS[113], we merged childhood data from birth (1958) and sweeps 1 to 3 (age 7 to 16 - 1974) to sweep 5 (age 33 - 1991). Similarly, for the BCS70[114], we merged childhood data from birth (1970), sweep 2 (age 10 – 1980) and sweep 3 (age 16 – 1986)

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[113] Sweep-specific NCDS data was sourced from the UK Data Archive and merged, study numbers: 5565 and 5567.

[114] Sweep-specific BCS70 data was sourced from the UK Data Archive, study numbers: 2666, 3723, 3535 and 5585.

to sweep 6 (age 34 – 2004). The earlier sweeps were chosen as the source of all of our explanatory variables, due to the empirical observation regarding the importance of the early years in determining later outcomes. Furthermore, sweep 5 was chosen for the NCDS (age 33) and sweep 6 for the BCS70 (age 34) as the source of our HE participation dependent variable as these sweeps offered the earliest and best match, due to the poor BCS70 postal survey at sweep 4 (age 26). Specifically, for the NCDS to determine HE participation we use a derived variable, which details highest qualification gained (and equivalent National Vocational Qualification level - NVQ) at age 33. For the BCS70, we use a similar derived variable, which detailed highest academic qualification at age 34. For further details, we refer the reader to Smith (1991) and Hancock & Johnson (2013) respectively. Data limitations meant that we had to use the qualifications obtained at these ages, rather than whether or not an individual actually started a degree-equivalent qualification. This is important because rates of dropout from HE in the UK are not insignificant (see Quinn, 2013; Vignoles & Powdthavee, 2009). For instance UK dropout rate from HE, has remained roughly static at a little over 6% since 2009/10 (SMF, 2016); although it varies significantly by institution, subject, year of study and demographic characteristics. Despite this, HE participation and attainment are used fairly interchangeably in the literature. Nevertheless, this should be kept in mind when interpreting the results.

From our two attainment measures in the NCDS (age 33) and BCS70 (age 34), we generate two binary variables. Mirroring the UK HE literature, we use attainment of an undergraduate degree/NVQ 5 equivalent or higher degree as our benchmark to indicate whether or not a cohort member has participated in HE. Alternatively, we could also have included HE diplomas, which rank above national A-Level examinations (age 18), and may well have been studied at a university, either as a stand-alone qualification or as an access course. We opted not to do this as the data did not contain the provision to control for type of institution attended as some of these courses may be offered at FE colleges. Therefore, for the NCDS, we code an observation with a '1' if they had obtained an NVQ level 5 or 6 by age 33 and a '0' otherwise. For the BCS70, we coded a '1' for participants who had achieved either a degree, postgraduate certificate in education or higher degree by age 34 and a '0' otherwise. Cases which did not indicate either a level or certain type of qualification, for example refusals, do not know, other missing, etc. were excluded from our sample. Using this coding procedure results in HE participation figures of 12.58% and 23.25%, for the NCDS sweep 5 and BCS70 sweep 6 respectively. We believe that is reasonably robust given that Galindo-Rueda &

Vignoles (2005), who inspire our methodological approach, place HE participation at 14.41% by age 33 for the NCDS (*n.* = 9,742) and 27.47% by age 30[115] (*n.* = 8,971) for the BCS70.

3.3.2 Bias and non-response in the 1958 and 1970 British birth cohort studies

As we use longitudinal data, we must consider the issue of differential non-response[116]. Non-response may well constitute a potential source of bias in longitudinal surveys. Plewis et al. (2004) provide estimates of the longitudinal response rates for the NCDS and BCS70. For the NCDS these stand at 98.8% (birth), 91.3% (age 7), 90.9% (age 11), 86.8% (age 16), 76.3% (age 23) and 71.6% (age 33). With respect to the BCS70, these are 95.9% (birth), 79.0% (age 5), 88.9% (age 10), 70.6% (age 16), 55.9% (age 26) and 71.5% (age 30). This, of course, represents a significant reduction in participation over time which will lead to bias if dropout from either study is not purely random.

Hawkes & Plewis (2006) explore this issue further by investigating different types of non-response using the NCDS. Generally, the authors consider unit non-response to be less of a problem, due to the methodological way in which the surveys were conducted and linkage with national registries, e.g. birth and death registers. Specifically, the authors model sweep non-response and attrition by estimating discrete time series models with fixed explanatory variables. They also estimate multinomial logistic regressions which predict the probability a cohort member will dropout from the survey for different types of non-response at various sweeps. Although most of the variance in non-response rates is unaccounted for in the authors' models, they conclude that: non-response in the NCDS is systematic, i.e. responses are not missing at random. They also find that men with lower educational attainment, less stable employment patterns and other types of background disadvantages are more likely to exit the survey. Furthermore, their models show that the best predictors of future non-response are previous measures, i.e. percentage of participants to the previous sweep and number of addresses attempted before gaining a response. Importantly they suggest that although it is theoretically possible to construct a set of universal probability weights to rebalance the sample and increase its representativeness of the general population, researchers should proceed

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[115] Note we use the age 34 sweep in the BCS70 to compute our HE participation variable.

[116] Non-response in longitudinal surveys can take three different forms. These are unit non-response, sweep non-response and attrition. Unit non-response usually consists of non-contact, inability to respond and lack of cooperation by the sampling unit. Sweep non-response, on the other hand, occurs when an individual does not reply at an earlier sweep, but re-joins the study in later sweeps. Attrition is the permanent loss of participants over time.

with caution. Caution is advised as there are only a small set of variables asked in all surveys from which to construct the weights. It is a real possibility, therefore, that a specific weight may work well in one context but will serve to enlarge bias in others.

Ketende et al. (2010) similarly investigate non-response in the BCS70 between birth and age 34. The authors estimate multivariate logistic regression response models. Predictor variables at sweep 0 (birth) were used with a response model estimated from age 5 through to 34. In addition, a further response model was estimated at age 34 using age 30 variables. The authors pay particularly close attention to the transition from parental completion of the surveys at sweep 3 (age 16) to cohort member completion at sweep 4 (age 26). The results show that non-response is again systematic, with gender of the participant, age of mother at birth, social class of father, birth weight, mother's and father's age at which they left school, family size, marital status, decision to breast feed and domicile region being important explanatory factors associated with non-response.

In conclusion, we observe that rates of attrition in the NCDS and BCS70 are significant and could bias our findings. We acknowledge this but resolve not to correct for this in our analysis, e.g. through the incorporation of sample weights[117]. Our decision aligns with the existing literature, which does not specifically account for sample bias. Nevertheless, we do address these concerns and mitigate the impact of sample bias by ensuring that our estimation sample is broadly comparable to those used in earlier studies (Blanden & Machin, 2004; Galindo-Rueda & Vignoles, 2005). We report the descriptive statistics of our sample in subsection 3.4.1.

3.3.3 Econometric Model

In this subsection we begin by outlining our empirical model to determine the influences on the probability of HE participation by estimating three unweighted logit models for each cohort. We also re-estimate these models restricting our sample by gender, to observe any differences and although do not present this output in the main text (see Appendix 8.7 for complete tables); we do refer to differences during the forthcoming discussion. Moreover, in order to choose a preferred model, we assess goodness-of-fit by conducting a range of goodness-of-fit tests to assess whether our model explains

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[117] The usual procedure to correct for any resulting bias is to employ a set of weights in the regressions. This in essence rebalances the sample, making it more representative of the target population.

variation in the data sufficiently (absolute fit) and which of our models is preferred (relative fit).

To estimate participation in HE, our econometric model takes the following form.

$$HEP_i = f(BG_i,\ g_i,\ CC_i\ ,SC_i) \qquad \textbf{(9)}$$

The dependent variable used in our models is denoted as HEP_i. This is a binary variable (this takes a value of '1' if the participant has achieved an undergraduate or higher degree and '0' otherwise), the subscript i denotes the individual. Our explanatory variables are: BG_i, a vector of background characteristics (including: 7 categories (septiles) of household weekly income (age 16)[118], dummy variables indicating father's social class[119] (General Register Office measure – age 16), dummies of age of mother (bands of years) at which they left fulltime education[120] – age 16, domicile region dummies (at ages 10 and 11[121]) and dummy categories for number of siblings – age 16); g_i, a vector of general ability (including: general ability index and second-order polynomial term); CC_i and SC_i are our respective vectors of principal components for Cultural and Social

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[118] For the NCDS, we computed our household income measure from 6 variables. These related to father's, mother's net pay and other sources both weekly and monthly income. The variables were originally coded as bounded income categories; these were subsequently assigned the middle value. Monthly variables were then converted to weekly amounts. The monthly and weekly net pay variables were then combined reducing the number of variables to 3 (one for father's, mother's net pay and other sources of income). We then verified whether we had complete information on net pay by cross checking our combined measures of father's and mother's weekly net pay with 2 additional variables stating whether at the time of the survey they were employed. Those household income values that then appeared to be missing were omitted and allocated a separate dummy variable 'data incomplete'. At this point we then combined the 3 variables into a singular measure of household income. However, a histogram revealed a large spike in observations at zero These were recorded as a new dummy variable 'not answered'. For the BCS70, household income data was less comprehensive, as it only included one banded variable (as opposed to 6 in NCDS); reflecting combined income of parents per week/month. This variable was coded similarly to the NCDS by indicating which income band a household belonged to. Similarly to the NCDS, we recoded this to reflect the middle income value. The coding did however reveal a number of additional specific missing cases, these were: 'not stated' and 'no questionnaire'. We omitted these from the income variables and created two additional dummy variables for each category. Given both our coding procedure and the large number of missing cases for both the NCDS and BCS70, we opted to convert our singular household income measures into quantile dummy variables. As these would also enable us to utilise a practical sample via inclusion of the specific missing cases (dummy variables that we created). The quantiles were computed in Stata using the xtile command. Lastly after some experimentation we settled on seven quantile categories (septiles), as this represented the most even distribution of individuals across quantiles between the datasets.

[119] For the purposes of this study, the words 'father' and 'mother' cover any person serving in these capacities for the cohort member when the survey was conducted.

[120] Bands for mother's age: $x < 15$, $15 \leq x < 17$, $17 \leq x < 19$ and $x \geq 19$.

[121] We opt to draw our domicile region dummies from sweep 2 (age 10), as the BCS70 data does not contain a like-for-like variable in sweep 3 (age 16).

Capital (these either consist of principal component based measures or indicator variables).

Our first model includes only BG_i and g_i. The second and third model adds to the first by including either our derived principal component vectors (CC_i and SC_i) or their constituent indicator variables. This format enables us to establish a baseline, then observe how the size and significance of these controls change as we add in our alternative measures of Cultural and Social Capital. We estimate these models using our estimation sample, male and female subsamples for each cohort.

3.3.3.1 Operationalising cognitive ability

To construct our general ability index, we follow the approach outlined in Galindo-Rueda & Vignoles (2005)[122]. Specifically, we use three test scores at age 10 to construct measures of ability in both the NCDS and BCS70. These are reading comprehension, Mathematics and logical reasoning[123] scores. These test scores were then subjected to PCA using our estimation sample, male- and female-only subsamples. In all cases we compute a single principal component, g_i. A summary table detailing the PCA descriptive statistics and component matrices can be found in the appendix (see Appendix 8.1 for further details).

3.3.3.2 Operationalising Cultural Capital

The birth cohort data is reasonably extensive with regards to cultural educational resources, interest in literature and general media. Though it did not offer indicators relating to a child's degree of cultural knowledge, fluency with modes of expression, cultural goods in home and parental Cultural Capital. As such we operationalise Cultural Capital, (similar to Kaufman & Gabler, 2004; De Graff et al., 2000; Kalmijn & Kraaykamp, 1996), by using indicators relating to parental outings with the cohort member, whether reads (and visits library) in spare time and listens to the radio. For completeness, in the NCDS we source our variables from both parents and teachers, whereas for the BCS70 we only use responses from parents. This was dictated primarily

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[122] The author's measure is itself based on the methodology detailed in Cawley et al. (1996).

[123] Reasoning scores were comprised of verbal and non-verbal test components. The NCDS data, unlike the BCS70, made provision to incorporate these reasoning scores separately. For consistency, we combined these into a single summative measure for the NCDS before subjecting the scores to PCA.

be availability of indicators in the data rather than by design. Specifically, we use six variables for the NCDS and seven for the BCS70. We would have preferred to use more detailed information, for instance, not just whether the parents took their children on outings but also what types of visits, e.g. museums, theatre, concerts, cinema, heritage sites, etc. Similarly, not just whether the young person reads or listens to the radio but what type of books young person reads, do they read newspapers specifically and what types of radio programmes are listened to? Using these less precise indicators will however inevitably result in a degree of measurement error, lead to a poorer operationalisation of the concept and bias our findings.

Table 3: Cultural Capital indicator variables and rotated component matrices for our estimation samples, derived from two British birth cohorts

Rotated principal component matrix – Cultural Capital			
NCDS – Age 11	**Principal components**		
Indicator variables	Cultural Participation	Interest in Literature	Engagement in Media
1. (Parent) Does Mum take child for walks and visits	0.935		
2. (Parent) Does Dad take child for walks and visits	0.936		
3. (Teacher) Does pupil borrow books from the library		0.798	
4. (Teacher) Pupil reads books-not school, homework		0.772	
5. (Teacher) Pupil reads newspapers, magazines and comics			0.742
6. (Teacher) Pupil listens to the radio out of school hours			0.754

Rotated principal component matrix – Cultural Capital			
BCS70 – Age 10	**Principal components**		
Indicator variables	Cultural Participation	Extended Literary Works	Engagement in Media
1. (Parent) Family Activities: Go for outings together	0.793		
2. (Parent) Family Activities: Go for walks	0.785		
3. (Parent) Cohort member spare time activities: Goes to a museum of any kind	0.476		
4. (Parent) Cohort member spare time activities: Reads books		0.780	
5. (Parent) Cohort member spare time activities: Goes to the library		0.679	
6. (Parent) Scale: Children's skills: Reads comics and magazines		-0.581	0.495
7. (Parent) Cohort member spare times activities: Listens to the radio			0.800

Table notes: With the exception of 'Does pupil borrow books from the library' for the NCDS and 'Scale: Children's skills: Reads comics and magazines' for the BCS70, all variables contain ordinal frequency response categories. For the NCDS categories are: 1 = 'Hardly ever' (excluding variable 3), 2 = 'Occasionally' (variables 1 and 2) / 'Sometimes' (variables 4, 5, and 6) and 3 = 'Most weeks' (variables 2 and 3) / 'Most days' (variables 4, 5 and 6). For the BCS70 categories are: 1 = 'Rarely or never' (variables 1 and 2) / 'Never or hardly ever' (variables 3, 4, 5 and 7), 2 = 'Sometimes' (excluding variable 6) and 3 = 'Often' (excluding variable 6). With respect to the two exceptions, the former is binary (0 = 'No' and 1 = 'Yes') whilst the later was converted into terciles based on the responses ranging from 0 to 100.

For each cohort, PCA was conducted four times: once using all non-missing responses, a second time using our estimation samples and a third and fourth time for our male and female subsamples. In all cases we use a VARIMAX rotation[124] to compute three principal components using the Anderson-Rubin extraction method. Firstly, with respect to the NCDS, we call our extracted Cultural Capital principal components 'Cultural Participation', 'Interest in Literature' and 'Engagement in Media'. Secondly, for the BCS70, we call these: 'Cultural Participation', 'Extended Literary Works' (excluding female subsample where we call the extracted principal component 'Arts Participation'[125]) and 'Engagement in Media'. These components were named in accordance with the pattern exhibited by the rotated component matrices produced when performing PCA. Specifically, for the NCDS, the first principal component 'Cultural Participation' is most highly loaded with respect to does father and, separately, mother take child for walks and visits. The second component, 'Interest in literature', is most highly loaded with respect to borrowing books from the library and reading books not designated as school homework. Lastly, the component 'Engagement in literature' is most highly loaded with respect to listening to the radio out of school hours and reading magazines, newspapers or comics. For the BCS70, the component 'Cultural Participation', is loaded with respect to family outings, walks and museum visits. It is important to point out here that the order in which this component was extracted changed. Rather than being the first to be extracted as in the NCDS, it was actually extracted second after 'Extended Literary Works' (exc. female subsample) and 'Arts Participation' (female subsample only) - as it did not account for the highest percentage of cumulative variance explained. Furthermore, 'Extended Literacy Works' is most highly loaded for the complete and male subsample with respect to reading for leisure, library visits and reading comics and magazines. The corresponding female subsample extract component 'Arts Participation', is loaded with respect to reading for leisure, library visits, listening to the radio and museum visits. Lastly, the component 'Engagement in Media' is most highly loaded with respect to listening to the radio, whereas the variable reading comics and magazines also features as a significant loading on this component for our complete and female PCAs. Complete summary tables of the PCA descriptive statistics and rotated component matrices are available in Appendix 8.2.

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[124] The Varimax rotation method extracts components from a set of indicator variables that are uncorrelated with each other.

[125] Correlating 'Arts Participation' with 'Extended Literacy Works' for the complete sample yields a correlation coefficient of 0.8800.

3.3.3.3 Operationalising Social Capital

The NCDS and BCS70 unfortunately did not make adequate provision to differentiate Social Capital by context. Nor do they contain sufficient information to map children's (or their parents') social networks and sense of community/peer characteristics (both residentially and at school). They do, however, contain a series of variables which relate to how the cohort member spends their leisure time, e.g. clubs, sports and meeting friends and so forth. As such we use these to proxy for Social Capital. Whilst involvement in clubs or sports are certainly likely to indicate whether a young person has a broader social network, it is important to note here that by doing so there is a danger that we might inadvertently capture non-cognitive traits (e.g. social competences) and aspects of personality (extraversion, and agreeableness). This is something we discuss in full when considering our findings. Specifically, our indicators most closely resemble that of Bianchi & Robinson (1997) and Stanton-Salazar (1995) by focusing on leisure activities, peer interaction and recreation[126]. Here we happen to source our variables for both datasets from both parents and teachers. Specifically, we use five variables for the NCDS and BCS70.

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[126] The BCS70, unlike the NCDS, provides an opportunity to better capture the size of an individual's Social Networks with respect to both strong and weak ties. The dataset contains questions such as how many friends/good friends a cohort member has in an ordinal geographical area. Unfortunately, large numbers of missing or uninformative values imply that we would only have complete information for a sample size of 393 individuals. This is too small to conduct meaningful analysis. A table of descriptive statistics of these variables can be found in the appendix (see Appendix 8.4).

Table 4: Social Capital indicator variables and rotated component matrices for our estimation samples, derived from two British birth cohorts

Rotated principal component matrix – Social Capital			
NCDS – Age 11	**Principal components**		
Indicator variables	Social Participation	Structured Participation	Introversion
1. (Parent) Child prefers to do things alone			0.976
2. (Teacher) Pupil meets friends out of school	0.770		
3. (Teacher) Pupils take part in sport out of school	0.773		
4. (Teacher) Pupil goes to clubs outside of school		0.714	
5. (Teacher) Pupil goes to school clubs outside of school hours		0.799	

Rotated principal component matrix – Social Capital			
BCS70 – Age 10	**Principal components**		
Indicator variables	Social Participation	Outgoing	Social Independence
1. (Parent) Scale: Child's behaviour – does things on own-rather solitary			0.789
2. (Parent) Cohort member spare time activities: sports	0.447		0.435
3. (Teacher) Scale: Perceived social networks of cohort member			0.604
4. (Parent) Cohort member activities on own: Plays in the streets		0.943	
5. (Parent) Cohort member spare time activities: Goes to a club or organisation	0.911		

Table notes: With the exception of two variables for the BCS70 'Scale: Child's behaviour – does things on own-rather solitary' and 'Scale: Perceived social networks of cohort member', all variables contain ordinal frequency response categories. For the NCDS categories are: 0 = 'No, never' (variable 1), 1 = 'Yes, sometimes' (variable 1) / 'Hardly ever' (variables 2 through 5), 2 = 'Yes, sometimes' (variable 1) / 'Sometimes' (variable 2 through 5), and 3 = 'Most days' (variables 2 through 5). For the BCS70 categories are: 0 = 'Never' (variable 4), 1 = 'Seldom' (variable 4) / 'Never or hardly ever' (variables 3 and 4), 2 = 'About once a week' (variable 2) / 'Sometimes' (variables 3 and 4) and 3 = 'Almost every day' (variable 2) / 'Often' (variables 2 and 3). With respect to the two exceptions, both were converted into terciles based on the responses ranging from 0 to 100 in the former case and 1 to 47 in the latter.

As before, PCA was conducted four times: once using all non-missing responses, a second time using our estimation samples and a third and fourth time for our male and female subsamples. Again, we use VARIMAX rotation and extract three principal components from each sample using the Anderson-Rubin extraction method. Firstly, with respect to the NCDS, we call our extracted Social Capital components: 'Social Participation', 'Structured Participation' and 'Introversion'. Secondly, for the BCS70, we call these: 'Structured Participation', 'Outgoing', and 'Social Independence' (exc. female subsample where we call the extracted principal component 'Socialite'[127]). These components were named in accordance with the pattern exhibited by the rotated component matrices produced after performing PCA. Specifically, for the NCDS, the component 'Social Participation' was loaded with respect to pupil takes part in sport out of school and meets friends out of school. Our second component, 'Structured Participation', was loaded with respect to participation in school clubs outside of school hours and/or non-school clubs. Lastly, the component 'Introversion' was loaded with respect to child prefers to do things alone. For the BCS70, the component 'Structured Participation' is loaded with respect to participation in a club or organisation and participation in sport. However, the loading associated with participation in sport drops below 0.400 for our male subsample, whereas, for the female subsample the variable does things on own (in addition to sport) also features with a loading of 0.533. The component 'Outgoing' is most highly loaded with respect to unstructured play presumably in the local neighbourhood (playing in the streets). Lastly, the component 'Social Independence', for the sample and male subsample, is most highly loaded with respect to child likes to do things alone, teacher's perception of child's social networks and whether child participates in sport. Conversely the principal component 'Socialite' extracted from our female subsample is only highly loaded with respect to teacher's perception of child's social networks. It is also evident that the order in which the components were extracted changed when conducting PCA when using our female subsample. Specifically, the component 'Social Participation' is extracted first, with 'Outgoing' second and 'Socialite' last. On the other hand, when using either the full estimation sample or male subsample, the extraction order is: 'Social Independence', 'Structured Participation' followed by 'Outgoing'. For complete summary tables of PCA descriptive statistics and rotated component matrices see Appendix 8.3.

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[127] Correlating 'Socialite' with 'Social Independence' for the complete sample yields a correlation coefficient of 0.6319.

One might suspect that some of our derived principle components for Cultural Capital might be correlated with those for Social Capital. Note that as we use the Varimax rotation method components are uncorrelated within each set. Testing this, for both the NCDS and BCS70, the highest correlation for the NCDS was found to be between the Cultural Capital component 'Engagement in Media' and the Social Capital Component 'Social Participation' at 0.1391. This rose to 0.1814 when using male sample and fell to 0.1206 for our female subsample. For the BCS70, the highest correlation was between the Cultural Capital component 'Cultural Participation' and the Social Capital component 'Structured Participation' at 0.1351. This reduced to 0.1351 when using the male subsample. Conversely, for females the highest correlation was found between the components 'Arts Participation' and 'Structured Participation' at 0.1457. As a rough rule of thumb, as long as the correlation between variables included within a model is less than 0.3, we can be reasonably be confident that heterogeneity is not a serious issue. Comfortably all correlations coefficients, between the various sets of extracted components, were below this threshold. For completeness we also correlated all extracted components with income. We again report that all correlations[128] were below this threshold.

3.4 Analysis

In this section, we present and discuss the results of our analysis. Specifically, we begin by describing the representativeness of our NCDS and BCS70 estimation samples with respect to those used in other studies in the UK HE literature and the population more generally. We then assess the goodness-of-fit of our various models and identify our preferred model. In the remainder of this section we describe our findings and the implications for the wider literature.

3.4.1 Sample descriptive statistics

Table 5 presents some key descriptive statistics for our NCDS and BCS70 samples. Our chosen samples consist of all cohort members who provided a definitive answer to their highest educational attainment at age 33 in the NCDS and age 34 in the BCS70; whilst also providing non-missing responses to our range of explanatory variables. We do, however, make provision to include those participants with specific missing cases where

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[128] We should point out here that due to missing values for household income correlation sample sizes were roughly half that (or less in some cases) compared to our estimation samples.

appropriate[129]. Without this accommodation, our final sample for the BCS70 cohort would have been impractically small[130]. In the table we compare and contrast differences in individual, parent and family socioeconomic characteristics between non- and participants in HE by cohort.

Table 5: Descriptive statistics comparing non- and participants in Higher Education using our estimation samples, male and female subsamples, derived from two British birth cohorts

		NCDS		BSC70	
		Non-participant	HE participant	Non-participant	HE participant
Sample sizes (No.)		5,441	865	3,965	1,279
Respective rates of participation in HE using our samples (%)		86.28	13.72	75.61	24.39
Gender	Male (%)	47.75*	56.88*	46.81	46.76
Income (age 16) - GBP per week	Mean	48.29*	55.32*	201.09*	282.09*
	10th Percentile	29.50	32.00	75.00	125.00
	25th Percentile	37.00	42.00	125.00	175.00
	50th Percentile	47.00	56.00	175.00	275.00
	75th Percentile	57.50	66.50	275.00	375.00
	90th Percentile	68.50	80.00	325.00	475.00
Father's occupational social status (age 10)	Professional (%)	4.27*	18.47*	3.57*	15.46*
	Intermediate (%)	17.92*	35.18*	22.13*	40.67*
	Skilled non-manual (%)	9.32*	14.47*	9.78	10.00
	Skilled manual (%)	45.13*	23.76*	48.32*	27.56*
	Semiskilled (%)	17.92*	6.59*	12.38*	5.80*
	Unskilled (%)	5.43*	1.53*	3.82*	0.50*
Mother's age at which she left full-time education[131]	Min (Years)	-	-	11	10
	Max (Years)	-	-	43	47
	Median (Years)	-	-	15	16

Table notes: Starred values indicate that the difference is significant at the 5% level using a 2-tailed two-group mean-comparison t-test. Significance tests were not carried out for income percentiles, minimum, maximum and median mother's age at which she left full-time education. To view a complete table of descriptive statistics for our samples (including specific missing cases) please refer to Appendix 8.5.

We make a number of observations from Table 5: first, a comparison of the two groups within cohort reveals that participants in HE tend to come from higher income households and have fathers who have high social status; second, descriptive statistics

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[129] The resulting coefficients (if significant) will alert us to whether or not something systematic is occurring.

[130] Computing a sample using non-missing values for the NCDS and BCS70 yields sample sizes of 4,056 and 1,178. For the BCS70, we deem this too small to conduct meaningful analysis.

[131] We are unable to present minimum, maximum and median (years) for the age at which the NCDS cohort member's mother-figure left full-time education. This is due to the way in which the variable is coded. For instance, mother's age at which she left full-time education for the NCDS contains the following categories: (1) 'under 13 years', (2) 13 to 14 years and so on until (10) '23 or more years'.

between cohorts reveal that 13.72% of the NCDS and 24.39% of the BCS70 participate in HE. Galindo-Rueda & Vignoles (2005) record HE participation rates of 14.41% for the NCDS and 27.47% for the BCS70 cohorts. Moreover, comparable API figures for the years 1978 and 1990, revealed participation rates of 12% and 19%. Therefore, based on these figures, it is likely that our NCDS sample reasonably approximates the true rate of HE participation, whereas our BCS70 sample likely overestimates it. We do also observe a higher percentage of males (57%) in the NCDS than females (43%) who go on to participate in HE. This pattern is not present in the BCS70, where instead 53% of HE participants are female. Nevertheless, these figures are consistent with what we observe in HE participation statistics, as the number of women participating actually overtook that of men in the mid-1990s. Mean weekly income for our NCDS sample (non- and participant in HE inclusive) is £49.28. For the BCS70, on the other hand, it is £221.45. This difference is indeed large and might reflect a shift in occupational patterns and perhaps additional earners as a consequence of higher female participation in the labour market. Indeed, those fathers who fall into the professional, intermediate and skilled non-manual account for 35.98% for the NCDS and 39.44% for the BCS70. We now proceed to present the output of our logistic models and assess goodness-of-fit. Then move on to discussing our results. Finally, we quantify the implications of our analysis by estimating the impact of our explanatory variables on the likelihood of HE participation.

3.4.2 Discussion

In this sub-section, we conduct a series of robustness checks to assess the absolute and relative fit of our models. This will identify which model is preferred and will subsequently form the basis of our discussion. After this, we compare and contrast changes in the control variables, highlighting any gender-specific differences. We then assess the extent to which our measures of Cultural and Social Capital relate to HE participation. This section is concluded by summing up the main insights gained and contribution to the UK HE literature.

3.4.2.1 Assessing goodness-of-fit

We estimate three models of HE participation, each of these is then estimated three additional times, e.g. for our estimation sample, male and female subsamples. The models differ with respect to the included variables. Model 1 includes a set of individual and family background controls comparable to the literature. Model 2 additionally includes our principal component based measures of Cultural and Social Capital, whereas model 3 includes their constituent indicator variables. In addition to STATA reporting the log pseudo-likelihood, likelihood ratio χ^2 statistic and pseudo-R^2 [132]; we conduct a range of post-estimation tests[133] which assess absolute and relative fit. These were Pearson χ^2 goodness-of-fit test, Hosmer-Lemeshow χ^2 goodness-of-fit test, Stukel's test, link test, likelihood ratio test, Akaike (AIC) and Bayesian Information Criterion (BIC). The latter three, compare relative fit between models. What follows will be a discussion of the main implications. Note that the full range of test results are reported in the appendix (see Appendix 8.7).

For the NCDS58, we could not reject the null hypothesis for the Hosmer-Lemeshow test that the fitted model is correct ($p < 0.05$) for model 1, 2 and 3. The test did however reject the null hypothesis for model 1 for our male subsample. The linktest results mirrored the Hosmer-Lemeshow (excluding the rejection of model 1 for our male subsample) as '*_hatsq*' did not exhibit any explanatory power across all models and subsamples. Conversely, Stukel's test did reject the null hypothesis for model 2 using the full sample, male and female subsample. Model 3 was also rejected when using our male and female subsamples.

For the BCS70, we could not reject the null hypothesis for the Hosmer-Lemeshow test, link test and Stukel's test. We do not think these latter findings are particularly surprising, given that HE expansion has occurred in the interim and the empirical finding that family background characteristics have increased in importance (Blanden & Machin, 2004; Galindo-Rueda et al., 2004; Galindo-Rueda & Vignoles, 2005). Based on these test results for both the NCDS and BCS70, we do not have any consistent evidence to suspect that our models do not fit the data appropriately.

Assessing the relative fit using the likelihood ratio test, AIC and BIC measures reveals a more mixed pattern. Generally we prefer lower values as models with higher log-

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[132] The reported pseudo R^2 measures from the regressions revealed that this generally increased across our three models, ranging: NCDS 0.3176 to 0.3315 and BCS70 0.2543 to 0.2663. Generally, a pseudo R^2 around 0.30 is considered excellent. However, the pseudo R^2 has a tendency to increase with the number of co-variates.

[133] We conduct this broad range as no individual test can reasonably be relied upon. For instance, the pseudo-R^2 has a tendency to increase with the number of parameters in the model. Whereas the Pearson χ^2 goodness-of-fit test may be unreliable if the number of covariance patterns approaches the number of observations as in our case. Moreover, we refer the reader to Hosmer et al. (1997) who provide a comparison of goodness-of-fit tests (Pearson, Hosmer-Lemeshow and Stukel's goodness-of-fit test) for logistic models.

likelihoods are superior. Computing these values, across our models and samples for the NCDS, reveals that model 2 always results in the lowest values for the AIC whereas for the BIC (which features a higher penalty for model size) model 1 is preferred. For the BCS70, we observe that the lowest values of the AIC for model 3 for our estimation sample and female subsample. Whereas for our male subsample, model 1 has the lowest value and is thus preferred. For the BIC model 1, similarly to the NCDS, is always preferred. Separately, the results of the likelihood ratio test indicate model 2 is preferred to model 1 for both the NCDS and BCS70 (excluding male only subsample). Furthermore, model 3 is not preferred to model 1 in the NCDS but is preferred for the BCS70 (excluding male only subsample). Based on these tests we choose model 2 as our preferred model for both the NCDS and BCS70.

3.4.2.2 Results

Table 6: Logistic regression output estimating the influences on the probability of participation in Higher Education using our estimation samples, derived from two British birth cohorts

	Empirical Estimations					
	(1) *BG_i, g_i*		**(2)** *BG_i, $g_{i,}$, CC_i & $SC_{i\ (PCA)}$*		**(3)** *BG_i, $g_{i,}$, CC_i & $SC_{i\ (Variables)}$*	
	NCDS Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*	**NCDS** Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*	**NCDS** Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*
N.	6,306	5,244	6,306	5,244	6,306	5,244
Pseudo R^2	0.3176	0.2533	0.3270	0.2577	0.3315	0.2648
CONTROL VARIABLES						
Gender (Base case: Females)						
Male	0.443***	-0.032	0.562***	0.050	0.568***	0.015
	(0.088)	*(0.078)*	*(0.092)*	*(0.082)*	*(0.095)*	*(0.086)*
Septiles of weekly household income £ - Age 16: (Base case: Septile 1)						
Septile 2	0.013	0.049	-0.045	0.060	-0.030	0.098
	(0.208)	*(0.204)*	*(0.210)*	*(0.205)*	*(0.211)*	*(0.207)*
Septile 3	0.014	0.188	-0.069	0.187	-0.044	0.240
	(0.227)	*(0.191)*	*(0.228)*	*(0.192)*	*(0.230)*	*(0.194)*
Septile 4	-0.096	0.369*	-0.109	0.378*	-0.109	0.466**
	(0.216)	*(0.197)*	*(0.217)*	*(0.199)*	*(0.219)*	*(0.201)*
Septile 5	-0.120	0.448**	-0.162	0.458**	-0.152	0.533***
	(0.215)	*(0.201)*	*(0.217)*	*(0.203)*	*(0.218)*	*(0.205)*
Septile 6	0.147	0.598***	0.112	0.615***	0.117	0.670***
	(0.201)	*(0.200)*	*(0.203)*	*(0.201)*	*(0.204)*	*(0.204)*
Septile 7	0.351*	0.839***	0.365*	0.843***	0.375*	0.895***
	(0.199)	*(0.209)*	*(0.201)*	*(0.211)*	*(0.203)*	*(0.213)*
Father's occupational social status – Age 10: (Base case: Skilled manual)						
Professional	1.105***	1.037***	1.017***	0.984***	1.007***	0.979***
	(0.155)	*(0.157)*	*(0.157)*	*(0.158)*	*(0.158)*	*(0.160)*
Intermediate	0.523***	0.412***	0.449***	0.367***	0.452***	0.346***
	(0.117)	*(0.102)*	*(0.119)*	*(0.103)*	*(0.119)*	*(0.104)*
Skilled non-manual	0.440***	0.138	0.363**	0.120	0.371**	0.104
	(0.143)	*(0.138)*	*(0.145)*	*(0.139)*	*(0.146)*	*(0.141)*
Semiskilled	-0.208	-0.116	-0.208	-0.113	-0.210	-0.122
	(0.172)	*(0.157)*	*(0.173)*	*(0.157)*	*(0.174)*	*(0.157)*
Unskilled	-0.149	-1.076**	-0.138	-1.056**	-0.127	-1.082**
	(0.314)	*(0.438)*	*(0.317)*	*(0.440)*	*(0.318)*	*(0.443)*
Mother's age at which she left full-time education – Age 16: (Base case: 15 to 16 Years)						
$x < 15$	-0.174	0.143	-0.115	0.120	-0.099	0.094
	(0.112)	*(0.223)*	*(0.113)*	*(0.224)*	*(0.114)*	*(0.227)*
$17 \geq x < 19$	0.225	0.377***	0.188	0.367***	0.190	0.363***
	(0.154)	*(0.124)*	*(0.155)*	*(0.124)*	*(0.156)*	*(0.126)*
$x \geq 19$	0.871***	0.890***	0.793***	0.873***	0.752***	0.834***
	(0.198)	*(0.153)*	*(0.200)*	*(0.154)*	*(0.201)*	*(0.156)*
Cognitive ability						
1st order	1.692***	1.065***	1.645***	1.031***	1.618***	1.031***
	(0.112)	*(0.049)*	*(0.113)*	*(0.052)*	*(0.112)*	*(0.053)*
2nd order	-0.016	0.202***	-0.024	0.199***	-0.013	0.193***
	(0.069)	*(0.035)*	*(0.069)*	*(0.035)*	*(0.069)*	*(0.036)*

Table 6 (Continued)

	(1)		(2)		(3)	
	NCDS Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*	**NCDS** Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*	**NCDS** Coeff. (β) *(s.e.)*	**BCS70** Coeff. (β) *(s.e.)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS						
Cultural Capital						
Cultural	-	-	0.009	0.109***	-	-
Participation	-	-	*(0.049)*	*(0.040)*	-	-
Interest in	-	-	0.270***	-	-	-
Literature	-	-	*(0.056)*	-	-	-
Extended Literary	-	-	-	0.060	-	-
Works	-	-	-	*(0.043)*	-	-
Engagement in	-	-	-0.154***	-0.011	-	-
Media	-	-	*(0.046)*	*(0.039)*	-	-
Social Capital						
Social Participation	-	-	-0.113**	-	-	-
	-	-	*(0.044)*	-	-	-
Outgoing	-	-	-	-0.167***	-	-
	-	-	-	*(0.041)*	-	-
Structured	-	-	0.023	-0.022	-	-
Participation	-	-	*(0.045)*	*(0.041)*	-	-
Introversion	-	-	-0.028	-	-	-
	-	-	*(0.047)*	-	-	-
Social	-	-	-	-0.016	-	-
Independence	-	-	-	*(0.039)*	-	-

[* p-value < 0.10, ** p-value < 0.05 and *** p-value < 0.01]

Table notes: All regressions additionally include controls for domicile region (government office region), number of siblings and specific missing cases. From model 3 we also omit the Cultural and Social Capital indicator variables for conciseness. Full tables of results for the NCDS70 and BCS70 separately can be found in Appendix 8.7. Moreover, Appendix 8.8 contains a table of marginal effect changes at representative values for our preferred model.

Before we proceed to discuss the results in detail it is important to consider whether these observed associations represent causal effects. In order to establish causality researchers must satisfy three conditions: temporal precedence, covariance of the cause & effect and that no possible alternative explanations exist. In other words, are the results consistent and have researchers been able to exclude all other alternative explanations through research design? We believe that our work satisfies the temporal precedence condition (cause precedes effect) due to the approach we adopt, whereby we source our explanatory variables from an earlier wave(s) and regress them on an outcome variable taken at a later date. This approach is also common practice in the UK HE literature (see Blanden & Machin, 2004; Galindo-Rueda & Vignoles, 2005). We also present multiple models which we would argue partially satisfies the covariance of cause & effect (internal validity) criterion. Thus we believe our models are more comprehensive than those in the relevant literatures, e.g. the range of controls we include to separate out individual and family background characteristics from cultural and social influences is greater than preceding studies. However, we do not specifically account for all possible sources of influence in our framework. As such, our results will likely be affected by omitted variable bias. Other related factors such as non-cognitive ability, personality and parenting might be positively biasing or driving some of our reported associations. As such, we also do not claim to have satisfactorily excluded all other possible alternate explanations through research design. Therefore, we recommended the reader interpret our main results as associations rather than 'effects'.

As Table 6 presents coefficients from a logistic regression (as opposed to odds ratios), which can't be directly interpreted, we compute the predicted probability changes with respect to a reference case in order to contextualise the results. The reference case we opt for is designed to reflect majority characteristics of our sample, namely: household income in the 3rd septile for the NCDS and 4th septile for the BCS70, father's occupational status is skilled manual, mother left full-time education at 0 to 15 years of age for the NCDS and 15 to 16 years of age for the BCS70, has a South East domicile, has 1 sibling and falls within the 50th percentile[134] for cognitive ability and Cultural and Social Capital components. Our model predicts, given this reference case, that a NCDS male cohort member has a 5.22% (95% CI: ±2.24ppts) chance of participating in HE, while a female cohort member has a 3.04% (95% CI: ±1.36ppts). For the BCS70 the respective HE participation probabilities are 18.00% (95% CI: ±5.08ppts) for males and 17.27% (95% CI: ±4.80ppts) for females. We argue that these adjusted predictions are more meaningful than simply using the mean values.

We now present the regression results using our estimation sample for the NCDS and BCS70. Please refer to Appendix 8.7 for the regression results using our male- and female-only subsamples.

3.4.2.3 Gender

For the NCDS, our results show that being male has a positive and significant association with HE participation, ceteris paribus. Moreover, our preferred model implies that males are significantly more likely to participate in HE by 2.18ppts (71.71%) for the NCDS. However, our results indicate that gender ceases to exhibit a significant association with HE participation for BCS70 cohort members. This is likely to reflect the relative increase in female HE and labour market participation experienced by the later cohort. For

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[134] In some cases, Stata did not compute a 50th or other percentiles for some of our Cultural Capital, Habitus and contextual Social Capital components due to an uneven distribution of principal component scores. In these cases we opted for the closest percentile, taking the maximum or minimum value (or where there was no difference between observations in a particular percentile the mean) if the percentile used was lower or higher than 50 respectively.

example in the 1992/93 academic year, API figures showed that female HE participation exceeded that of males for the first time (HEPI, 2010), female participation in the labour market has also been increasing over this period.

3.4.2.4 Family background

To control for family background, we included dummy variables for father's occupational status, mother's education, family income, domicile region and number of siblings. We include father's occupational status as men (particularly in the NCDS cohort) who were traditionally the main household earners. Likewise, we also include a proxy for mother's education (age at which she left full-time education), as women traditionally bore the main responsibility for childcare. This also helps to mitigate potential multicollinearity concerns, as father's occupational status and education are likely correlated.

We report statistically significant associations with respect to father's occupational social class categories: professional, intermediate and skilled non-manual (NCDS only) and the opposite (i.e. negative) for unskilled (BCS70 only) category compared with our base case skilled manual, ceteris paribus (see Figure 7). For the NCDS, this appears to be largely driven by females as the professional status category is only statistically significant for females in our preferred model. The significance of the intermediate category for BCS70 males on the other hand, becomes insignificant once we add our Cultural and Social Capital principal components to the model.

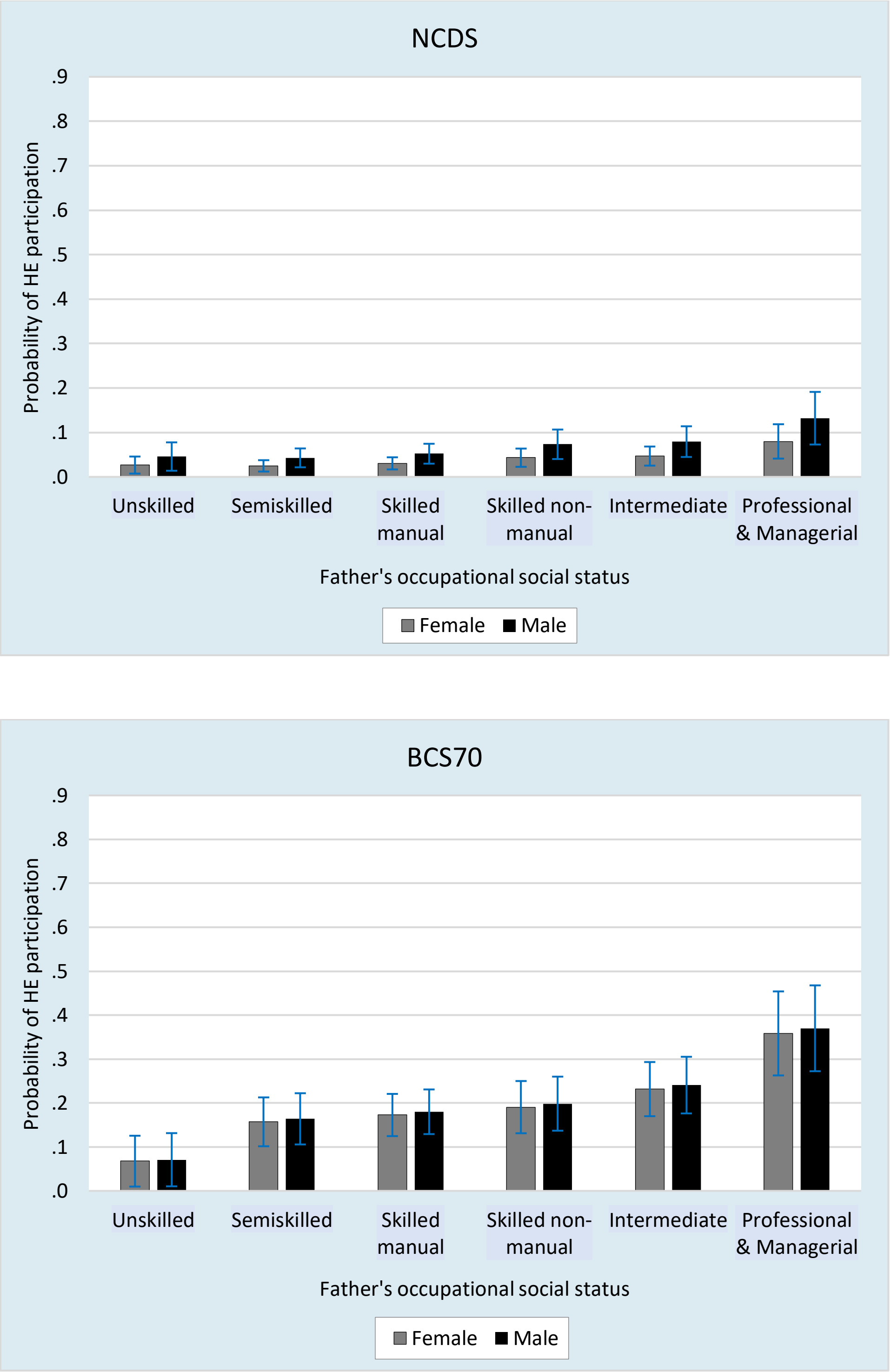
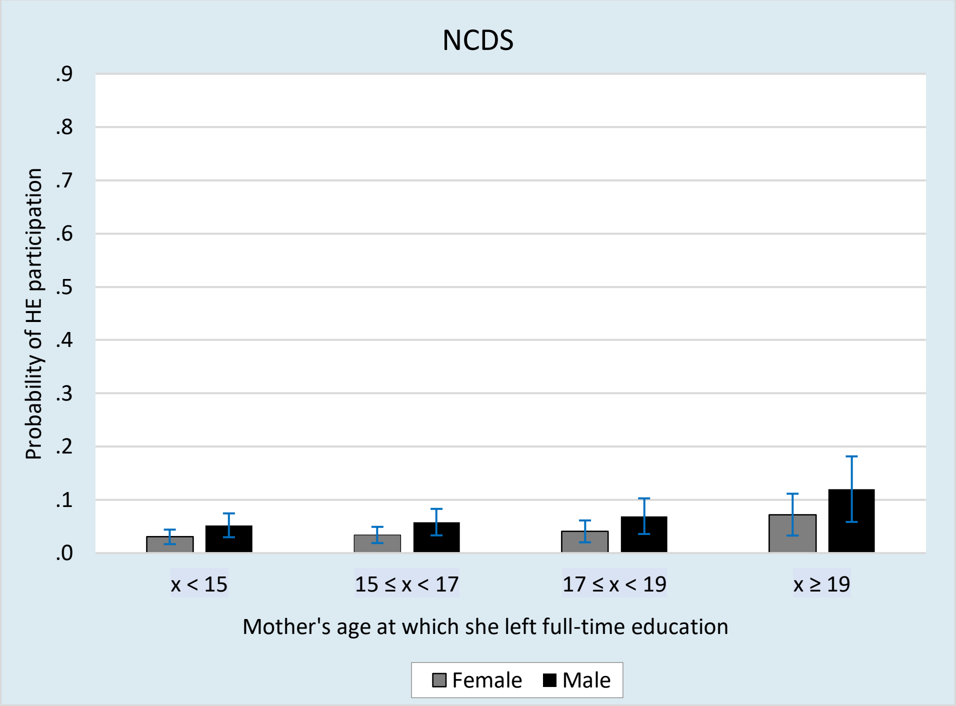


Figure 7: Predicted probability of participation in Higher Education: the role of father's occupational social status using our estimation samples, derived from two British birth cohorts

We also report a positive association between those whose mother was aged 19 or above when she left full-time education, compared to those whose mother was aged between 15 and 17, ceteris paribus (see Figure 8). The association does, however, appear to be stronger for males as the magnitude of the coefficients is larger when using only male cohort members. More generally, we speculate that maternal participation in FE (and HE), increases their child's probability of participating in HE (intergenerational educational transmission). For example, parental experience or attainment in HE may be indicative of a strong belief in the value of education, or parents' desire (parental aspirations) for their child to follow in their footsteps. Role model effects may also increase the desire of the child to attain or surpass the same educational level or occupational social status as their parents. The latter explanation could also be invoked to explain why father's professional occupation status is shown to have a positive and significant association with an individual's likelihood of HE participation.



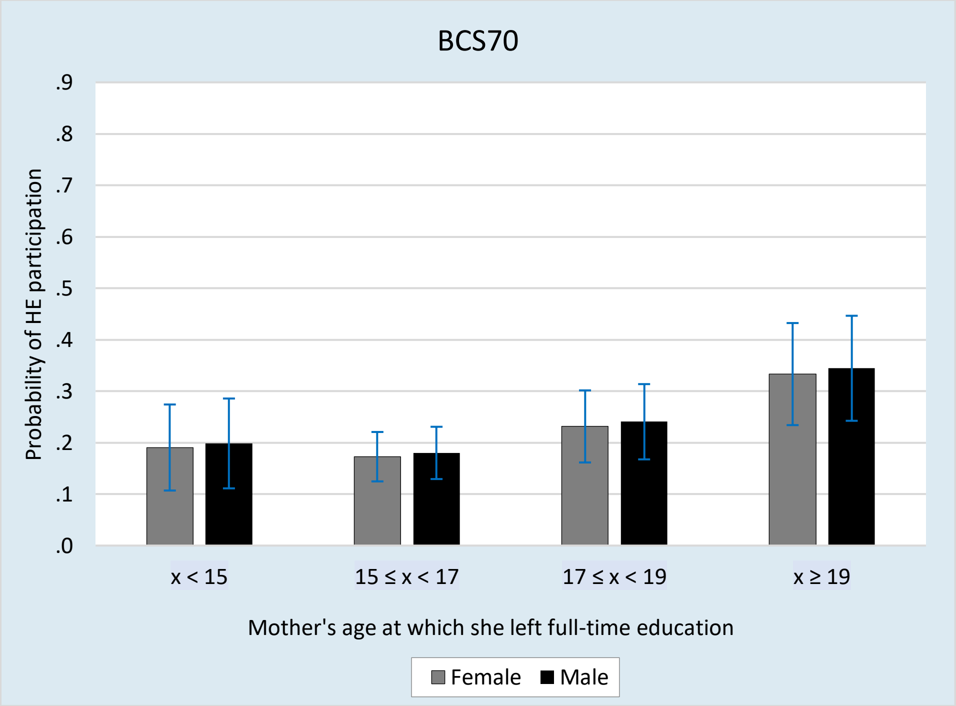


Figure 8: Predicted probability of participation in Higher Education: the role of mother's age at which she left full-time education using our estimation samples, derived from two British birth cohorts

What is perhaps surprising is the relatively weak association between income[135] and HE participation (in contrast to that which is reported in and Galindo-Rueda & Vignoles, 2005; Blandon & Gregg, 2004; Blandon & Machin, 2004; and Galindo-Rueda et al., 2004). This may be due to the fact that our study includes a very extensive set of individual and background controls. Nevertheless, in the BCS70 we do report positive and statistically significant associations between coming from a household whose income falls within the 5th through 7th septile, as opposed to our base case – 1st septile, ceteris paribus (see Figure 9). In addition, the stronger association observed in the BCS70 does, however, appear to be greater for female cohort members. The magnitude of the coefficients appears slightly larger, whilst septiles 4 and 5 are not statistically significant for males.

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[135] We do however, observe somewhat more significance between the cohorts with respect to the BCS70 which coincidently appears to be largely driven by females.

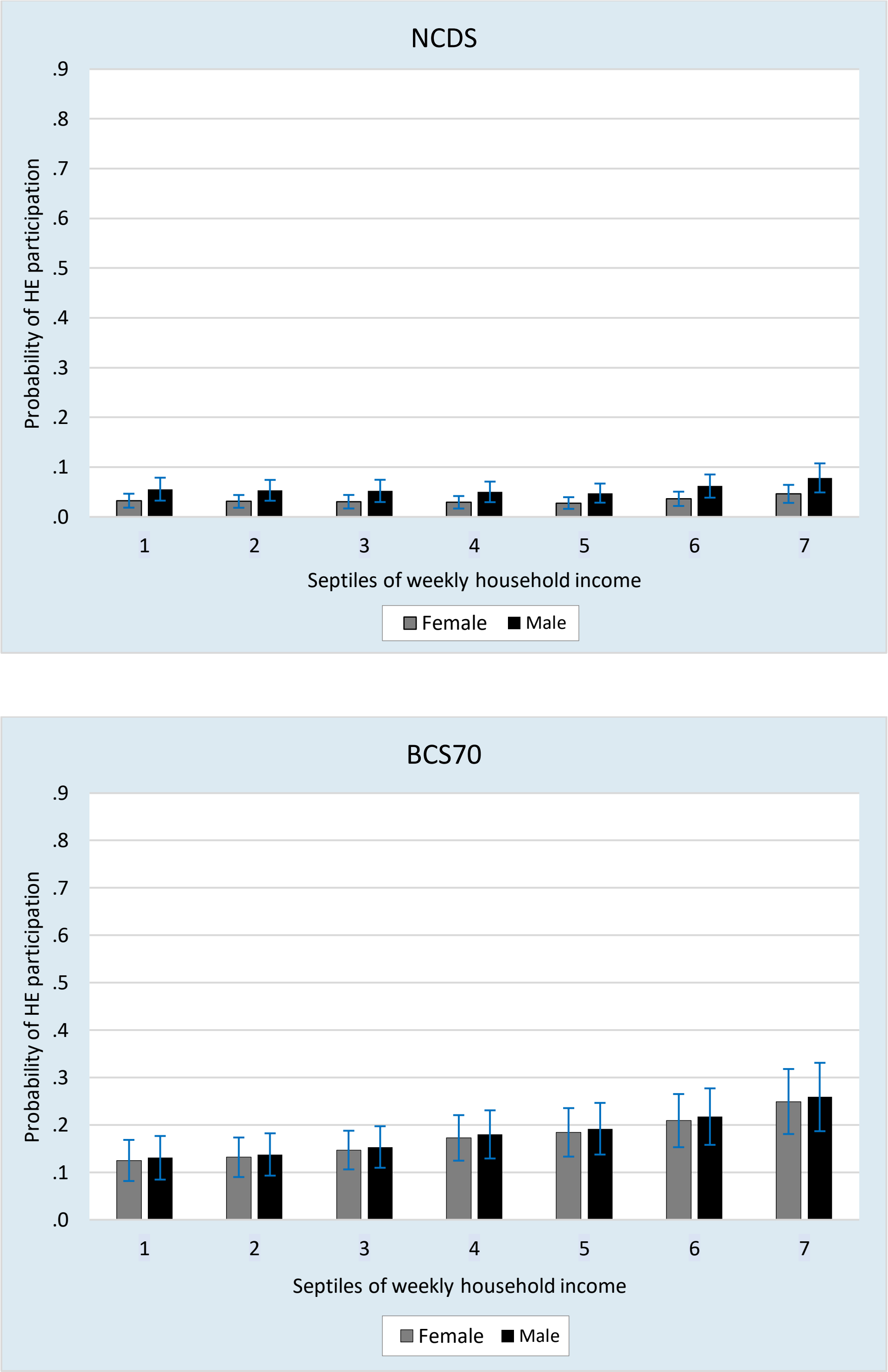

Figure 9: Predicted probability of participation in Higher Education: the role of household income using our estimation samples, derived from two British birth cohorts

In order to further contextualise the results, our model implies that if we simultaneously change father's occupational status to professional (from skilled manual) and household income to the 7th septile (from 3rd/4th in the NCDS/BCS70) - this increases a male and female cohort member's probability of future HE participation in the NCDS by 13.80ppts (265%) and by 8.77ppts (288%) respectively. For the BCS70, the increases in HE participation for male and female participants are 30.32ppts (168%) and 29.79ppts (173%) respectively.

3.4.2.5 Cognitive ability

As our operationalisation procedure for cognitive ability emulates closely that outlined in Galindo-Rueda & Vignoles (2005), it is no surprise that this represents one of the largest positive and statistically significant associations we observe on the likelihood of HE participation. Interestingly, we also trialled and then included a 2nd order polynomial term in order to observe whether, as we move through the distribution, ability exhibits an increasing or decreasing association with respect to HE participation. Our results reveal that the coefficient is positive and statistically significant for BCS70. This implies that, at higher cognitive abilities, the influence of ability on the likelihood of HE participation declines, ceteris paribus. This does not appear to be the case in the NCDS, as ability appears to exhibit a fairly constant relationship. We illustrate the probabilities and marginal effect changes[136] over the range of scores for both the NCDS and BCS70 in Figure 10 and 11.

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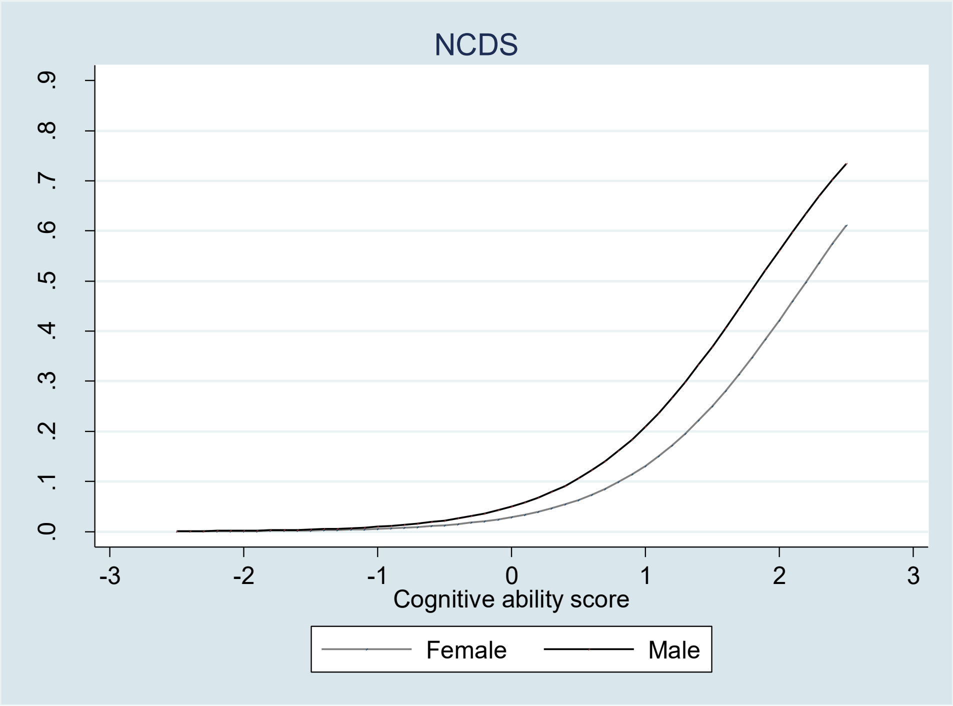
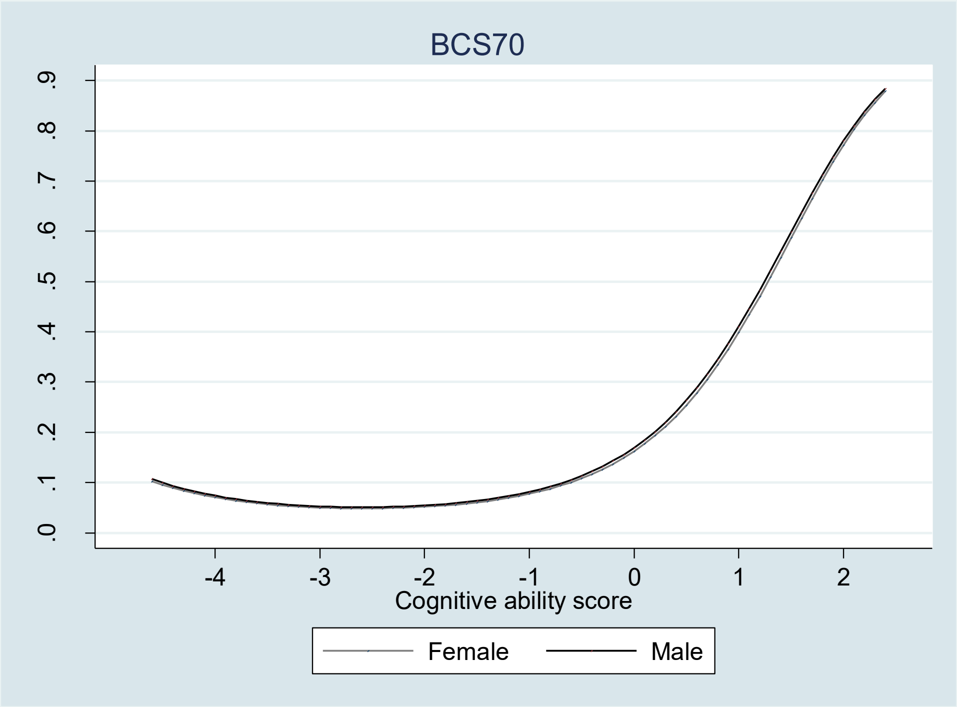
[136] Marginal effects can be interpreted as a unit increase in x will either decrease/or increase the probability of HE participation by y.

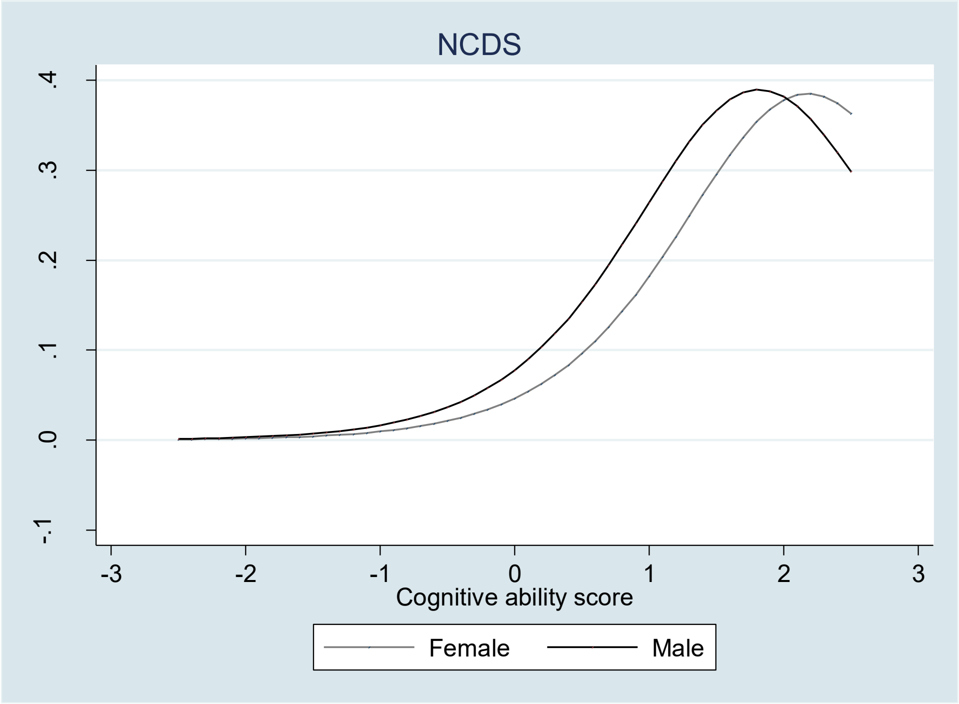


[Approx. *g* score percentiles:
10th (-1.40), 25th (-0.78), 50th (0.03), 75th (0.76) and 90th (1.28) percentiles]



[Approx. *g* scores percentiles:
10th (-1.36), 25th (-0.67), 50th (0.07), 75th (0.73) and 90th (1.21) percentiles]

Figure 10: Predicted probability of participation in Higher Education across the range of cognitive ability scores using our estimation samples, derived from two British birth cohorts



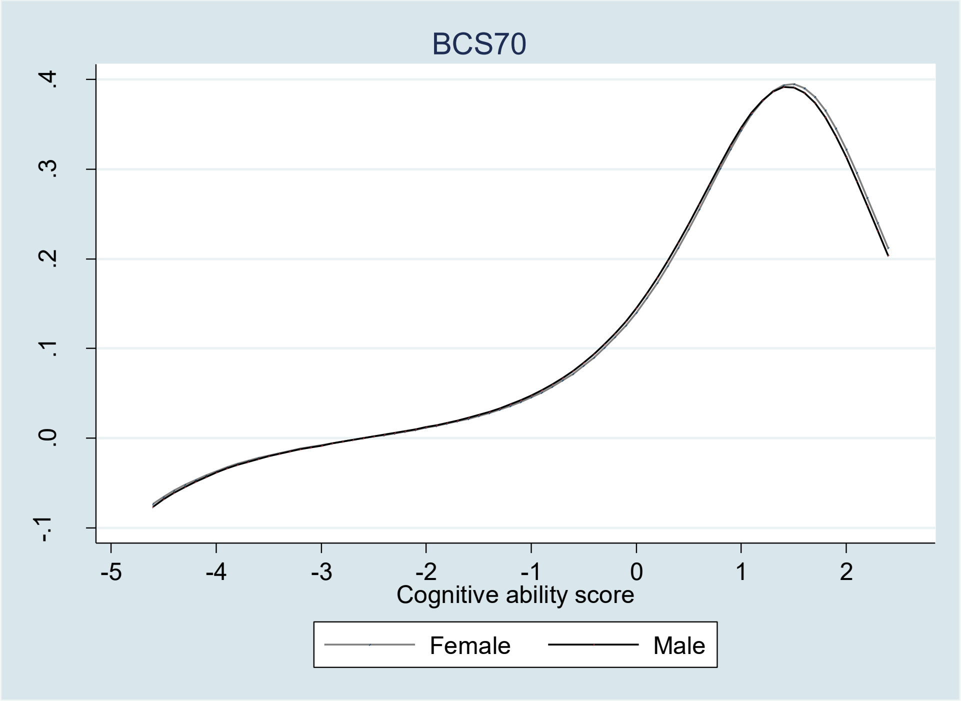


Figure 11: Marginal effects on the probability of participation in Higher Education across the range of cognitive ability scores using our estimation samples, derived from two British birth cohorts

3.4.2.6 Cultural Capital

Our results reveal several statistically significant associations arising from our included principal components with respect to the likelihood of HE participation. From the NCDS results, we see that our Cultural Capital components 'Interest in Literature'[137] and 'Engagement in Media'[138] both exhibit statistically significant associations with future HE participation yet are oppositely signed. Our component 'Interest in Literature' exhibits a positive, whilst 'Engagement in Media' shows a negative association. For the BCS70, on the other hand, we only observe a (positive) statistically significant association for the component 'Cultural Participation'.

For the NCDS component 'Interest in Literature' (see Figure 12), the indicator variables that loaded most heavily for this component were: pupil borrows books from the library and pupil reads books not school homework. A higher relative ranking for this component, therefore, may indicate that a cohort member has a preference for reading extended literary works and that reading accounts for a significant proportion of their leisure time. It may be reasonable to infer then that the pupil is likely to be well-read, whilst the act of reading itself may also result in a higher academic reading ability. In the latter case, causality could, of course, run in the opposite direction, i.e. interest in literature leads to faster progression in reading ability. However, given that we control for general ability, which is derived in part from verbal ability at age 11, the statistical significance of the component 'Interest in Literature' likely captures more than just reading ability. We believe the most plausible explanation is that interest in extended literary works is likely to lead to the reader acquiring cultural knowledge. This may translate into opportunities and beneficial outcomes by being able to demonstrate ones' cultural competence to peers.

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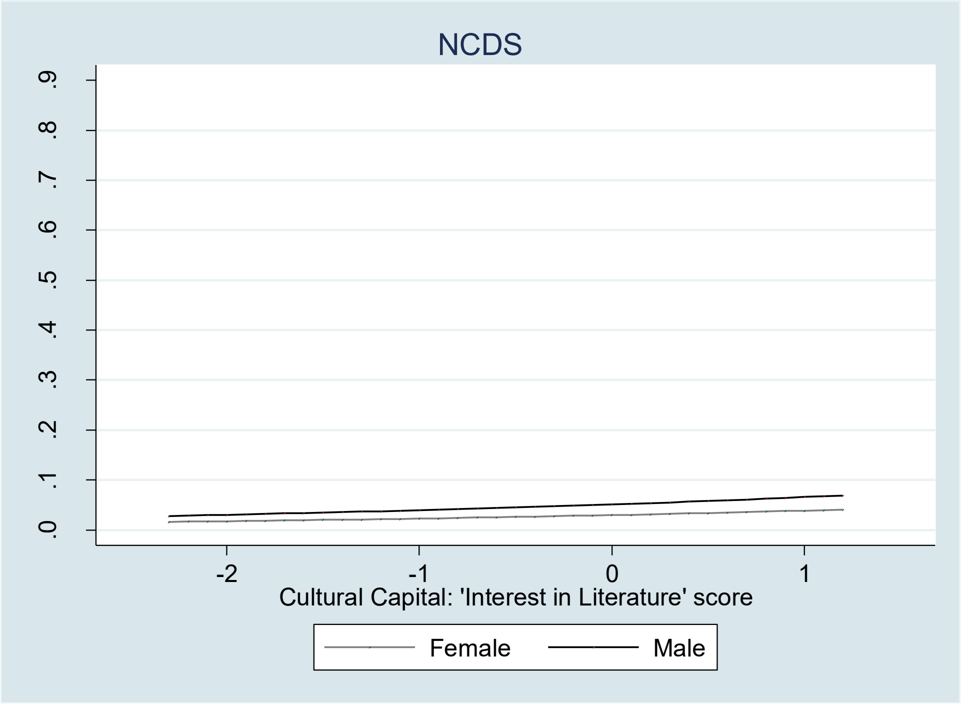
[137] Correlating our Cultural Capital component 'Interest in Literature' (age 11) with continuous weekly household income (age 16) and ability (age 11) separately, we find that income has a positive but less than 0.07 association. Therefore, we can be reasonably confident that our component 'Interest in Literature' is not substantively correlated with income. For ability, we find that the association is also positive and somewhat higher at approximately 0.32.

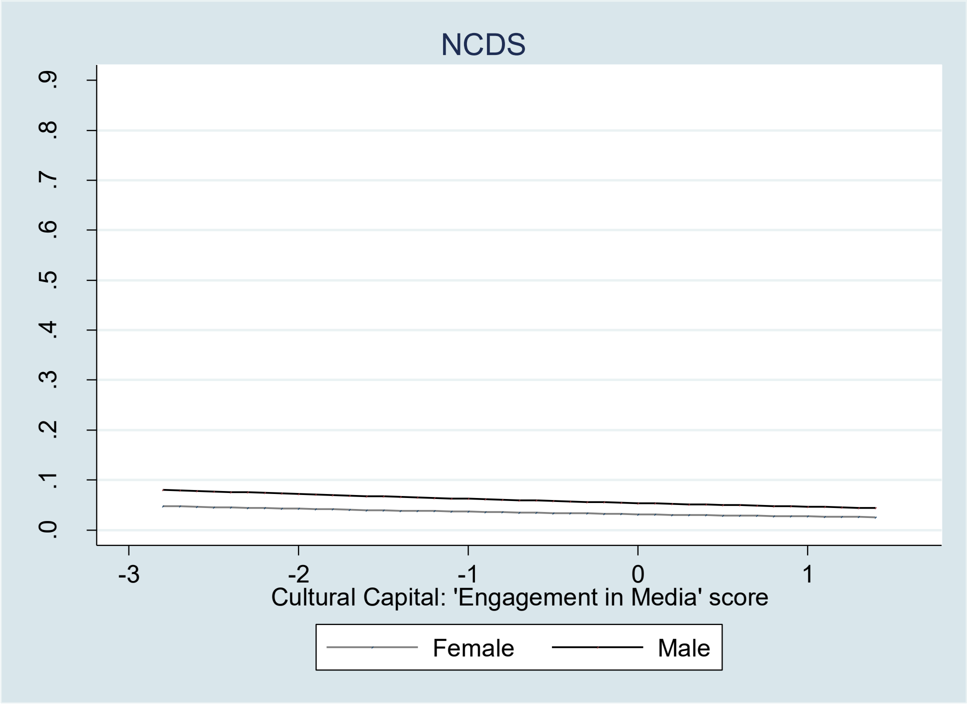
[138] For completeness, we also correlated our Cultural Capital component 'Engagement in Media', weekly household income and our measure of ability. We found that this component had a negative association 0.01 with income and positive 0.06 with ability.



[Approx. ‘Interest in Literature’ percentiles:
10th (-1.34), 25th (-0.79), 50th (0.09), 75th (1.02) and 90th (1.08) percentiles]

Figure 12: Predicted probability of participation in Higher Education: the role of a Cultural Capital principal component ‘Interest in Literature’ using our estimation sample, derived from the National Child Development Study 1958

On the other hand, we observe a negative association with respect to higher scores for the NCDS component ‘Engagement in Media’. To explain this recall that this component is loaded most heavily with respect to the indicator variables ‘pupil reads newspapers, magazines and comics’ and ‘pupil listens to the radio’ (see Figure 13). We think that the most likely explanation, given the negative association exhibited with HE participation, is that an hour spent reading magazines and comics or listening to the radio is likely to result in an opportunity cost. Insofar as an hour spent doing these activities is unlikely to be as beneficial as, say, reading a literary work or listening to politics and current affairs-based radio broadcasts.

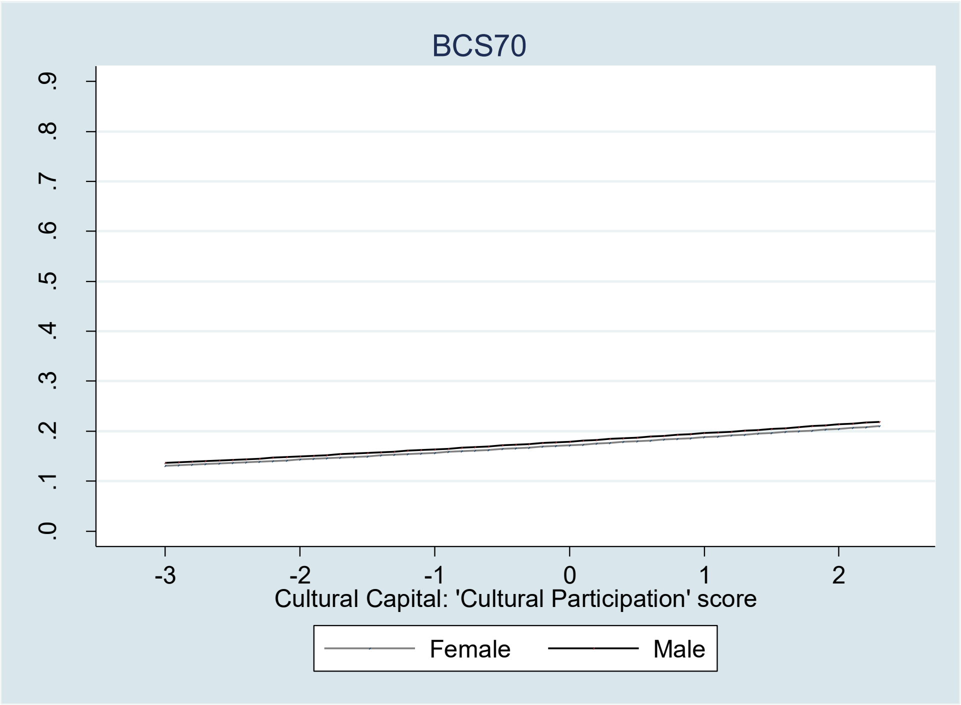


[Approx. ‘Engagement in Media’ percentiles:
10th (-1.62), 25th (-0.73), 50th (0.22), 75th (0.88) and 90th (1.24) percentiles]

Figure 13: Predicted probability of participation in Higher Education: the role of a Cultural Capital principal component ‘Engagement in Media’ using our estimation sample, derived from the National Child Development Study 1958

We did trial including an additional 2nd order polynomial term for these two components in our preferred model but neither was statistically significant. To further contextualise these associations further, our model implies that the positive effect of moving from the 50th the 75th percentile of ‘Interest in Literature’, is approximately equivalent to a movement from the 3rd to the 6th septile of household weekly income. As is the estimated impact of moving from the 50th to the 25th percentile of ‘Engagement in Media’.

Turning now to the BCS70, the only Cultural Capital component that exhibits a (positive) statistically significant association in our results is ‘Cultural Participation’. We illustrate this component in Figure 14. However, the significance of this component appears to be driven largely by young women, as it is not statistically significant using our male BCS70 subsample. This could be construed as evidence in support of Gender-Socialization Theory, which hypothesises that males may be averse to utilising their Cultural Capital, as the expression of this may be perceived as effeminate by their peers. Furthermore, recall that this component is loaded most heavily with respect to the variables: family activities: go for outings and for walks; cohort member activities: goes to museum of any kind. Given this, one explanation maybe that BCS70 cohort members with higher relative scores in this component participate in the Arts and/or (high-brow) cultural activities to a greater extent. Recall that we invoked a similar explanation to explain the association for the component 'Interest in Literature', in that higher Arts participation may result in the participant acquiring cultural knowledge, thus becoming more culturally astute. However, given the high weighting with respect to the variables family activities – go for outings together and walks – this result may reflect parental values, interests, style and degree of involvement. Dumais (2002) finds that the inclusion of Habitus (embodied Cultural Capital), which we are unable to control for with this data, mediates Cultural Capital associations (although this remains statistically significant for females which is consistent with our findings).



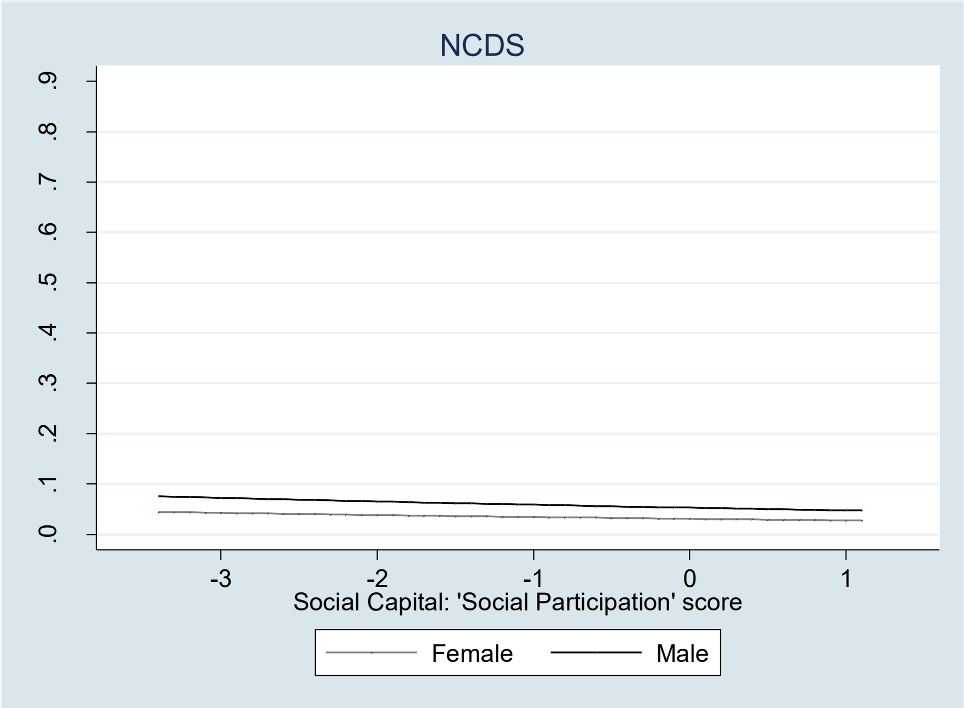
[Approx. 'Cultural Participation' percentiles:
10th (-1.32), 25th (-0.73), 50th (0.05), 75th (0.67) and 90th (1.36) percentiles]

Figure 14: Predicted probability of participation in Higher Education: the role of a Cultural Capital principal component 'Cultural Participation' using our estimation sample, derived from the British Cohort Study 1970

To contextualise these associations further, our model implies that the positive impact of moving from the 50th to the 75th percentile of 'Cultural Participation' is approximately equivalent to a movement from the 4th to the 5th septile of household weekly income.

3.4.2.7 Social Capital

Our results, using the NCDS sample, show that the Social Capital component ‘Social Participation’ exhibits a negative and statistically significant association with future HE participation, ceteris paribus (see Figure 15). Moreover, this association appears to be driven by young men, as we do not observe a significant relationship when we estimate the model using our female subsample. Recall that the indicator variables that load most heavily onto this component are: pupil takes part in sport outside of school and pupil meets friends outside of school. Therefore, a higher relative ranking may reflect reduced academic focus, particularly given that it only appears to exert a statistically significant association for males. We speculate that young men who prefer to play sport may also be more likely to view doing well at school as effeminate. Dumais (2002) suggests that young men may actively downplay their Cultural Capital, however this may not apply to Social Capital. One might also argue that this result is capturing aspects of personality, e.g. primarily extraversion.

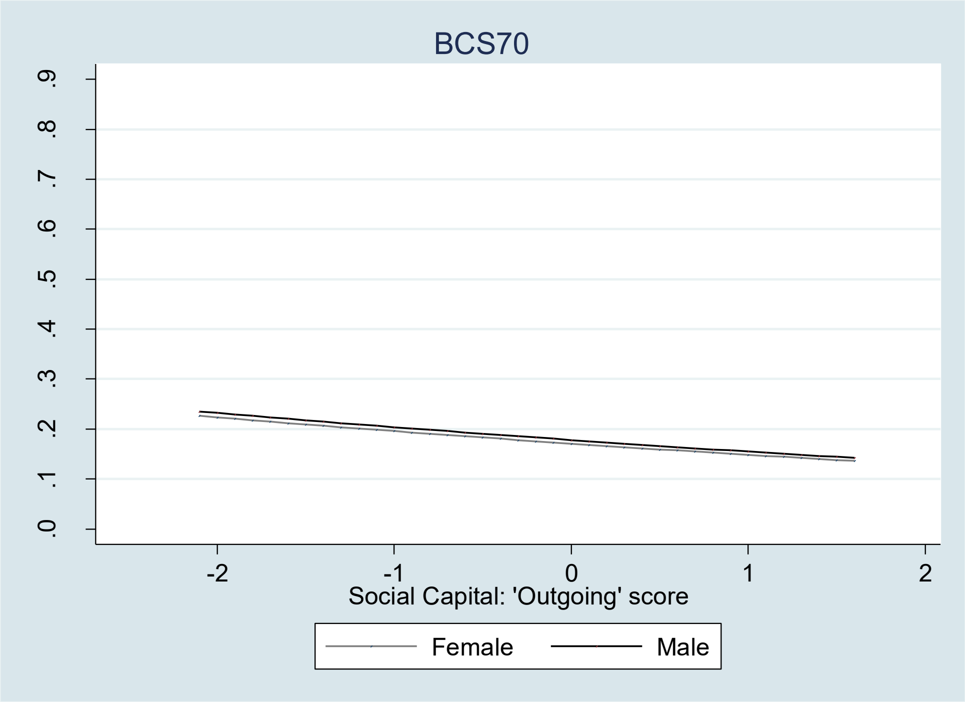


[Approx. ‘Social Participation’ percentiles:
10th (-1.20), 25th (-0.92), 50th (0.11), 75th (1.03) and 90th (1.12) percentiles]

Figure 15: Predicted probability of participation in Higher Education: the role of a Social Capital principal component ‘Social Participation’ using our estimation sample, derived from the National Child Development Study 1958

Our BCS70 results reveal a consistently negative and statistically significant association with respect to the component ‘outgoing’ on future HE participation (see Figure 16). Again, we suspect that higher scores for this component might be indicative of children who prefer to spend time playing outside rather than engaging in academic activities such as completing homework. Particularly, as the sole indicator variable that loaded heavily onto this component is ‘cohort member activities on own: Plays in the streets’. As with the NCDS component ‘Social Participation’ one could again argue here that this is capturing extraversion and openness to experiences.

The results also indicate that although the component ‘Social Independence’ is negatively associated with HE participation but not statistically significant using the full BCS70 sample, it becomes so when using only young men. Conversely, in our female subsample the equivalent component ‘Socialite’ exhibits a positive but weak statistical association with HE participation, ceteris paribus. This might indicate that young women may not be as adversely affected if social networks offer a form of support. As, the sole indicator variable that loads strongly onto this component is ‘perceived social networks of cohort member’.



[Approx. ‘Outgoing’ percentiles:
10th (-1.25), 25th (-0.90), 50th (-0.08), 75th (1.00) and 90th (1.28) percentiles]

Figure 16: Predicted probability of participation in Higher Education: the role of a Social Capital principal component ‘Outgoing’ using our estimation sample, derived from the British Cohort Study 1970

To contextualise these associations further, our model implies that the positive impact of moving from the top half (75th percentile) to the bottom half (25th percentile) of ‘Social Participation’ and ‘Outgoing’ is approximately equivalent to a movement from the 3rd to the 6th septile and 4th to between the 5th and 6th septiles respectively for the NCDS and BCS70 of household weekly income.

Before we summarise our findings, it is important to specifically consider how the addition of our measures of Cultural and Social Capital have affected the association between HE participation, individual and family background characteristics. Comparing model 1 with 2, i.e. that without and with the addition of our principal component based measures of Cultural and Social Capital, we observe no change in the significance of the coefficients for these characteristics. We do however observe some slight changes in the magnitude of the coefficients which is to be expected. For example, we observe a reduction in our coefficients for father’s occupational social status. Specifically, the coefficient for the professional category which declines from 1.105*** to 1.017*** for the NCDS and 1.037*** to 0.984*** for the BCS70. This pattern is repeated throughout the remaining categories with the exception of semiskilled for the NCDS. We also observe a similar pattern for mother's age at which she left full-time education and cognitive ability for both the NCDS and BCS70. On the other hand, we see a marginal increase in the magnitude of the coefficients for the incidence of being male for both cohorts. For instance, the coefficient for male increases for the NCDS from 0.433*** to 0.562***. The coefficients for the BCS70 also become positive, although not statistically significant, moving from -0.032 to 0.050. Interestingly, though we see a different pattern with respect to household income between the two cohorts. For the NCDS, we observe a decrease in the magnitude of coefficients whereas for the BCS70 they increase.

Our results would seem to suggest that individual and background characteristics are relatively poor proxies for cultural and social influences. Therefore, we think that the inclusion of measures of Cultural and Social Capital captures new dimensions, which have not adequately been accounted for in the literature thus far.

3.4.2.8 Summary

Our results revealed that the incidence of being male for the NCDS has a positive and statistically significant association with HE participation. However, we find no significant association by gender for the BCS70. As expected, we also find positive statistically significant associations with father's occupational status (professional and intermediate categories) and mother's age at which she left full-time education (late teens and beyond). Somewhat surprisingly, we do not report particularly strong or consistent associations between household income and HE participation. Nevertheless, these might be explained by the reasonably comprehensive set of family background controls we include compared with the existing literature, in addition to a measure of cognitive ability. It is, unsurprising that our measure of cognitive ability exhibits one of the strongest associations with future HE participation. However, our findings using the BCS70 do indicate a weakening in this association, whilst the relationship may be non-linear (with it reducing at higher abilities, ceteris paribus).

Of particular interest to this study is whether the inclusion of our measures of Cultural and Social Capital yield significant associations with HE participation. After conducting a range of tests for absolute fit we find no consistent evidence that our models do not adequately fit the data. Moreover, tests of relative fit indicate that model 2 (which contains our principal component based measures of Cultural and Social Capital) is preferred for the NCDS with respect to the AIC and likelihood ratio test. However, the results for the BCS70 are a little more mixed although the likelihood ratio test does also indicate that model 2 is preferred to model 1 (excluding our male only estimation).

From the results, we report a number of statistically significant associations stemming from the inclusion of our principal component based measures for Cultural and Social Capital. For instance, the Cultural Capital components ‘Interest in Literature’ (NCDS) and ‘Cultural Participation’ (BCS70) exhibit positive and statistically associations. On the other hand, the component ‘Engagement in Media’ (NCDS) had a negative association. Alternatively, negative and statistically significant associations were exhibited by the components ‘Social Participation’ (NCDS) and ‘Outgoing’ (BCS70). More generally, the implied effects of these associations appear stronger for the NCDS than for the BCS70. These estimated effects are substantive in the context of the prevailing literature. For instance, using our preferred model for the NCDS moving from the 50th to the 75th percentile of ‘Interest in Literature’ is approximately equivalent to a movement from the 3rd to the 6th septile of household weekly income.

3.5 Conclusion

The aim of this chapter was to explore whether rudimentary measures of Cultural and Social Capital, in addition to cognitive ability, individual and family background characteristics, exhibit significant associations with respect to an individual’s likelihood of HE participation. Generally, our results are consistent with the current literature, insofar as they indicate the primary importance of cognitive ability, individual and family background characteristics in determining whether or not an individual participates in HE. Our results also tentatively suggest that family background characteristics have increased in relative importance for the latter BCS70 cohort, in keeping with the literature (Blanden & Machin, 2004; Galindo-Rueda et al., 2004; Galindo-Rueda & Vignoles, 2005). Nevertheless, we demonstrate that the addition of specific elements of our Cultural and Social Capital measures adds something new to our understanding HE participation. Specifically, our measures were shown to exhibit statistically significant associations with HE participation for both cohorts. The implied effects can be quite substantial and equivalent to a large increase in household income. However, we do note differences in the associations by gender, particularly with respect to the BCS70. As such, our findings demonstrate that further exploration of cultural and social influences offers a promising avenue of research.

This research also makes an innovative methodological contribution through our operationalisation procedure. Specifically, the way in which we capture and include measures of Cultural and Social Capital within a model predicting HE participation using two well researched cohort studies. In the forthcoming chapter, we complement this research by estimating the influences on the likelihood of HE participation by age 20 for a more recent cohort of young persons. Most of these young persons, would have participated in HE by the 2008/09 academic year at age 18. Given the richness of our data, we are also able to expand our conceptualisation of Cultural and Social Capital by including a measure of a young person's Habitus and two additional contextual sources of Social Capital (at home and at school). The latter follows a trend in the Social Capital literature to differentiate by context, initiated by Parcel & Dufur (2001), to do so.

4. SECOND EMPIRICAL CHAPTER

"*Do Cultural Capital, Habitus or contextual sources of Social Capital affect progression into HE? An analysis using a recent British cohort (LSYPE)*"

4.1 Introduction

Having established that our measures of Cultural and Social Capital are significantly associated with future HE participation for the 1958 and 1970 cohorts, this chapter expands upon the preceding work in three main ways: first, we explore the influences of Cultural and Social Capital on a more recent cohort of individuals born in 2004; second, in order to explore the influences of a young person's sense of self with respect to HE participation, we incorporate a measure of Bourdieu's notion of Habitus in our analysis; third, we follow a trend in the recent Social Capital literature, by differentiating into home and school contexts. This is important because whilst a number of contributions exist in the US literature in relation to this latter point of interest, social and institutional differences may make these findings less applicable to a British context. Moreover, to our knowledge, this is the first study which explores the influences of Social Capital by context, either with or without a measure of Habitus in the UK.

To undertake our analysis we use the Longitudinal Study of Young People in England 2004 (LYSPE). Unlike both of the two cohort studies used in our previous empirical chapter, the LSYPE collects detailed information on educational aspirations and social activities. This offers us the unique opportunity to explore whether Habitus and additional Social Capital contexts, for a more recent cohort of individuals, are significantly associated with HE participation by age 20. Specifically, we estimate three models of HE participation. The first model includes a set of individual and demographic controls. Whereas, the second model builds on the first by adding measures of Cultural and Social Capital, similar to those we included in the prior empirical chapter. The third model, adds to the second by included additional measures of Habitus, Social Capital at home and at school.

This chapter is structured as follows: Section 4.2 reviews a selection of recent contributions to the Habitus literature, in addition to a related strand of literature concerning educational aspirations (and their relationship with expectations and achievement), and, lastly, contributions to the contextual Social Capital literature. Again, we pay particular attention to how previous authors have defined, operationalised and measured Habitus and contextual sources of Social Capital in order to inform our own operationalisations. In section 4.3 we introduce the data we use and outline our analytical approach. In section 4.4 we describe our sample, detail our main findings and discuss. Section 4.5 concludes.

4.2 Literature Review

We begin this section by discussing a number of contributions to the Habitus literature, before proceeding to discuss some recent work relating to aspirations, expectations and achievement in the UK. This is followed by a review of those studies that differentiate Social Capital into different contexts.

4.2.1 Habitus literature

Horvat & Davis (2011) investigate the association between Habitus and social mobility. To conduct the analysis, the authors utilise a sample of disadvantaged youths, between the ages of 16 to 24 enrolled on the US YouthBuild programme[139], the majority of whom had dropped out from high school. In order to explore these issues, the authors employ qualitative methods to analyse open-ended interviews with 57 YouthBuild graduates from eight YouthBuild sites. Interviews were divided into three sections which consisted of motivations for joining a YouthBuild programme (friends, family and children), experience on the programme (both positive and negative, interactions with staff and outsiders) and post-YouthBuild experiences (employed, enrolled in FE and other outcomes). The authors also collected information on the participants' pre-YouthBuild educational experiences and their general attitudes before and after the programme. To gain a sense of the individual's Habitus, the authors focus their attention on a participant's sense of self-esteem, accomplishment and contribution to the welfare of others and how this changed before and after the programme. The qualitative analysis indicated that participation in the programme had a deep and personal impact on each YouthBuild graduate[140]. Furthermore, many seem to have reflected quite profoundly on their previous attitudes and taken this new-found

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[139] YouthBuild began in 1979 in Harlem. As of July 2017, there are 260 programmes in 46 states across the US. The programme aims to equip individuals from deprived backgrounds with construction skills through the building of community assets such as affordable housing, community centres and schools.

[140] It is also true that most YouthBuild graduates also secured jobs post-programme and enjoyed associated rises in their earning power and living arrangements.

understanding forward. The impact appears to go beyond simple short-term behavioural changes into more embodied behaviours, e.g. higher self-esteem, confidence, etc. From the responses, it also appears that participants developed a greater self-worth and a new-found sense of place. This is evidenced in post-programme surveys, as not only did many participants secure further employment but also experienced improvements in their living arrangements.

Dumais (2002) looks at the association between Cultural Capital and GPA of white 8th grade students (age 13 to 14) from the NELS 1988 in the US. Given the continuous nature of their outcome variable, the author utilises OLS with and without school-based fixed effects[141] and metric coefficients. The author operationalises Habitus using a dummy variable based on a student's future occupational expectations, e.g. whether they expected their occupation by age 30 to be characterised as professional, managerial, or business; business owner; Science or engineering. Cultural Capital is operationalised using parental responses relating to their child's participation in the Arts. This is included as a summative score depending on the number of activities participated in: Art, Music, dance lessons, borrowing books from the public library, attending concerts or other musical events and visiting museums. The author introduces controls for gender, socioeconomic status and cognitive ability. The results reveal that as expected ability plays the most important role with respect to educational attainment. Interestingly, Habitus is shown to exert a larger impact than Cultural Capital. Separately, exhibited Cultural Capital associations do appear to vary by gender. For instance, Cultural Capital is shown to exhibit a small positive association for females, whereas for males Dumais finds the opposite, albeit only significant in the school fixed effect models. The author hypothesises that young men downplay their Cultural Capital in order to avoid looking effeminate in the eyes of their peers, whereas young women may emphasise it in order to gain more support from teachers (teacher-selection effect).

Wildhagen (2009) contributes to the debate by investigating the way in which Cultural Capital affects three educational outcomes for 12th grade high school students (age 17 to 18) in the US. The three outcomes are GPA, reading and Mathematics test scores. To conduct the analysis, the author utilises a sample of approximately 13,000 individuals from the US NELS. Cultural Capital is operationalised within this study through the

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[141] Estimating pooled within-school regression estimates enables the authors to separate individual from school-level deprivation, e.g. differential access amongst schools with respect to cultural resources.

inclusion of a scale variable, comprised of seven indicator variables relating to the students cultural investment in the eighth grade (age 13 to 14). Specific indicator variables include: whether the student takes art, music, dance or language classes and whether the student visits Art, Science, or History museums on occasions outside of school. The author first presents a measurement model of the causal relationship between Cultural Capital and educational outcomes. The author then estimates and presents three weighted SEM[142] with respect to 12th grade GPA, reading and Mathematics test scores. The author's measurement model consists of a pathway leading from parental education, family income and other individual and background controls at the 8th grade (age 13 to 14) to Cultural Capital. Pathways then led from Cultural Capital to educational expectations (which proxy for Habitus) and teachers' perceptions (with an included covariance term) in the 10th grade (age 15 to 16). An additional analytic pathway then extends to academic outcomes in the 12th grade from Cultural Capital, as well as further pathways from educational expectations and teacher perceptions. The results suggest that Cultural Capital does not appear to be associated with teacher perceptions (teacher-selection effect). Teacher perceptions were, however, positively related to various measures of academic achievement. Finally, Cultural Capital was shown to boost Habitus, as it had a positive impact on educational expectations (self-selection effect).

Gaddis (2013) explores the potential for Habitus to mediate observed Cultural Capital associations with respect to self-reported GPA scores for a sample of disadvantaged youth. The author's sample was derived from the Big Brothers/Big Sisters of America Programme (BBBS)[143] in the 1990s. To conduct the analysis the author employs a first-difference modelling approach[144] with and without measures of Habitus. The author operationalises Cultural Capital in the following way: whether the individual attended a museum, theoretical performance (both in the last 12 months), took lessons in 'high-culture' (Music, Art, dance, and language) and hours spent reading. Habitus is operationalised through the inclusion of two variables: the Harter Scholastic Competence Score (HSC) and the Berndt & Miller School Value score (SV). The HSC is a five-variable composite measure of a child's (ages 8 to 14) self-perception and

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[142] SEM in this context is useful as it helps address measurement error whilst also enabling the researcher more scope to specify the form and function of Cultural Capital.

[143] The BBBS offers one-to-one professional youth support and mentoring to disadvantaged individuals. Programme staff conducted and collected data on 959 individuals from eight cities in the US.

[144] A first-difference modelling approach allows the researcher to only account for changes in covariates over time. Whereas, the inclusion of fixed effects also enables the author to control for time invariant effects, i.e. person-specific unobservable factors.

confidence in his or her ability to do schoolwork. Separately, the SV is an 18 variable composite measure of a youths' views on the role education plays with respect to later job-market success and life satisfaction. To determine whether Habitus mediates the Cultural Capital association, the author utilises Baron & Kenny (1986)’s four criteria[145] and the Sobel test[146]. The only other control included in the model is youth assignment to a mentor. The results confirm that Cultural Capital, specifically Arts participation and reading, is positively associated with self-reported GPA scores for disadvantaged youths. However, when Habitus is included, it is found to have a relatively large impact whilst completely mediating the Cultural Capital association.

In summary, authors have operationalised Habitus using a variety of indicators in order to determine whether it is associated with educational and other youth outcomes. For instance, Horvat & Davis (2011) in a qualitative study, gain a sense of Habitus through young peoples’ self-esteem, sense of own accomplishments and contribution to society. Dumais (2002) operationalise Habitus through future occupational expectations. Gaddis (2013), is somewhat of an exception, by making use of two previously developed constructs (HSC and SV). Each of these captures the young person’s views of his or her ability to complete schoolwork and the importance of education with respect to determining later life outcomes. Lastly, Wildhagen (2009) proxies for Habitus through educational expectations. Nevertheless, what all of these studies have in common is that their indicators all relate to an individual’s self-perception and their place in the world.

To conclude, these studies confirm that Habitus is associated with youth educational outcomes. More specifically, educational or social status aspirations appear to play a key role with respect to determining life outcomes. For instance, Horvat & Davis (2011), find that an individual’s Habitus can play an enabling role with respect to social mobility. Gaddis (2013) presents evidence that Habitus mediates Cultural Capital associations. On the other hand, Dumais (2002), found evidence that Habitus has a large positive association with GPA whilst completely mediating the impact of Cultural Capital.

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[145] The four categories are outlined by Gaddis (2013): “*(1) The independent variable significantly accounts for variation in the mediator variable, (2) the independent variable significantly accounts for variation in the dependent variable, (3) the mediator variable significantly accounts for variation in the dependent variable while controlling for the independent variable, and (4a) controlling for the mediator variable reduces the effect (partial mediation) of the independent variable on the dependent variable or (4b) controlling for the mediator variable estimates the effect (complete mediation) of the independent variable on the dependent variable*” (Gaddis, 2013, p.6).

[146] The Sobel Test is a formal test which tests for the presence of an indirect (mediation) effect of a third variable on the observed relationship between two other variables.

Whereas, Wildhagen (2009), rejects Bourdieu's CRT explanation, through teacher-selection. Namely, that children use high-culture to secure additional support from teachers. Instead presenting evidence that supports self-selection, with educational expectations as an enabling factor for social mobility. We now discuss a related strand of literature, which has been conducted in a UK context.

4.2.2 Aspirations, expectations and achievement - some recent evidence from the UK

In this section we begin by discussing some contributions to a strand of literature related to Habitus. First, we discuss an article that investigates the evolution of a young person's expectations regarding application and incidence of applying for HE with respect to a recent British cohort. Second, an article looking at how school-age learning aspirations and attitudes change over the educational journey. Lastly, one that assesses the importance of class rank on later educational outcomes.

Anders & Micklewright (2015) explore how a young person's expectations of university attendance change with educational progression and how these translate to HE applications for different socioeconomic groups up to age 21. To conduct the analysis, the authors utilise various samples and subsamples from the LSYPE to estimate two broad sets of linear probability models[147] with some featuring school fixed effects. Their models control for prior educational attainment (Key Stage 2 and 4), individual and background characteristics. Specifically, they estimate the influences on the probability those aged between 16 and 17 (sweep 4) who said they were likely (separately not very likely) to apply at age 13 or 14 (sweep 1). Then the influences affecting those who actually go on to apply for HE aged between 19 and 20 (sweep 7), given that they said they were likely (separately not very likely) to apply at sweep 4. The results suggest that expectations of HE participation harden, becoming more polar, as individuals progress in their educational journey up until age 16. No decline in the expectation-HE participation gap is observable afterwards. Their results also show that expectations start lower and fall fastest for those young people who originate from less affluent family backgrounds. Early educational attainment (Key Stage 2 – age 11) also appears to be a more important indicator than familial background. Nevertheless, schools appear to play

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[147] Although logit and probit models are usually preferred, estimating binary models using OLS is generally accepted within economics-based disciplines. Anders & Micklewright (2015) justify their empirical choice on the grounds that it offers a convenient way to measure and interpret the associations.

an important role with respect to turning expectations into actual applications. However, the authors are unable to characterise how schools might do this with much detail. From a policy perspective, the author's argue, that interventions around age 14 may be particularly effective[148].

Rampino & Taylor (2013) explore how school-age aspirations and attitudes change with educational progression. To conduct the analysis, the authors utilise a sample derived from the British Youth Panel, which is a component of the BHPS[149]. The data was augmented with gender and regional unemployment rates (as a proxy for the economic cycle), from the UK LFS. The authors' estimate a series of random effect probit models[150] (presenting mean marginal effects) to determine the influences on educational attitudes[151], aspirations[152] and participation in post-compulsory education. These models control for child's age, household composition, parental education, employment status, owner/occupier, income, region, youth unemployment rates, immigration status and year. The results suggest that young women generally appear to have higher and more stable aspirations than young men, whilst they are also more sensitive to the business cycle. On the other hand, parental characteristics appear to be a more important influence for young men, whilst they are also more sensitive to negative feedback, i.e. poor test performance.

Murphy & Weinhardt (2014) investigate the importance of early academic rank position, i.e. the importance of their within-class ranking in terms of performance in their KS2 exams (age 11), on later educational outcomes. The authors hypothesise that early educational rank position affects academic self-concept, e.g. confidence, perseverance, etc. For the main part of the analysis, the authors estimate an educational production

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[148] Students in year 9 (age 13 to 14) select their GCSE (age 16) examination options. These subsequently influence choices at Advance Level (A-Level - age 18), which in turn influence HE study options and beyond.

[149] The panel nature of the data allows the authors to employ a multivariate framework similar to that of Mundlak (1978) and Chamberlain (1984), which control for time invariant effects.

[150] The authors use random effect models as these allow for correlation between individual-specific unobserved terms and the time varying observable characteristics.

[151] Educational attitudes were captured through responses relating to the importance of doing well in school and gaining GCSE qualifications.

[152] Educational aspirations were captured through whether the individual wished to leave school at age 16 and whether they wanted to attend university.

function using a sample derived from the PLASC[153] linked with the NPD[154]. Their sample consists of approximately 2.3 million school-age children in England, separated into five annual cohorts 2000/2001 to 2005/2006[155]. The LSYPE, which contains a sample of PLASC-NPD participants, was also used to explore how early self-concept translates to self-assessments of subject-specific academic ability and later educational attainment. Specifically, the authors estimate a series of linear regression models with school-subject-cohort fixed effects. The results suggest that a child's ranking within their primary school class is significantly associated with later educational attainment. Specifically, a higher ranking leads to enhanced self-concept in a subject which translates into higher academic outcomes. The association also appears stronger for males as opposed to females. Interestingly, it is also noticeable that students who have a low relative ranking and originate from deprived backgrounds do not appear to be affected. More generally, the results also show that students across the rank distribution appear to be able to accurately place themselves within their class despite not being explicitly told of their rank. The authors conclude that it may be advantageous for teachers (or indeed managers in an employment context) to highlight local or global rank in certain instances. One example of this might be to remind a student of their school rank (for motivational purposes) if they have recently been struggling within a high-ability subject class.

These studies in conjunction with the Habitus literature highlight the importance of educational aspirations with respect to later academic achievement. For instance, Anders & Micklewright (2015) provide evidence that suggests aspirations and expectations appear to be consistently higher than eventual achievement. The gap seems to close as individuals' progress through their educational careers and update their beliefs. However, individuals from more deprived backgrounds appear to experience the fastest decline in their expectations and aspirations. Rampino & Taylor (2013) provided evidence that suggests young men appear to have lower educational aspirations than young women. They also show that males appear to be more affected by positive parental

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[153] The PLASC was administered by the DfE. This consisted of a mandatory census return for all publicly funded educational establishments in the UK. PLASC collects pupil information such as gender, ethnicity, language skills, special educational needs and eligibility for FSM. The PLASC was replaced by the School Census in 2007.

[154] The NPD contains a record of every state schooled pupil's progression through the KS1 to KS5 in English, Mathematics and science. Each individual is given a unique identifier so that their progress can be followed as they transition to various schools through time.

[155] KS3 examinations ceased to be assessed externally after 2008/09 which made 2005/06 the last viable cohort given this study's design.

characteristics and negative feedback than females. Lastly, Murphy & Weinhardt (2014) reveal that males also appear to be more affected by early educational ranking.

4.2.3 Contextual Social Capital literature

In this section we discuss a recent trend in the Social Capital literature which differentiates between capital acquired in different contexts and how these impact upon youth outcomes. Specifically, we begin with Parcel's & Dufur's (2001) early attempt to conceptualise Social Capital into specific contexts, before moving on to more recent examples. We also look at evidence which informs on whether the parent-adolescent relationship influences youth outcomes, if school-level characteristics modify this relationship and, more generally, the interaction of familial- and school-based resources.

Parcel & Dufur (2001) investigate the association between Social Capital in different contexts with respect to student Mathematics and reading scores in the US. The authors utilise a cohort of participants to the US National Survey of Youth[156] 1997. Specifically, they merged child and mother data from first grade (age 6 to 7) through to 8th grade (age 13 to 14). The authors operationalise Social Capital at home using six elements (all measured in 1994): the home environment, mother's knowledge of child's friends and location, church attendance, number of children, parental marital status and working hours. Social Capital at school is operationalised via: type of school (whether state-run, private or religious), teacher-student and counsellor-student ratios, school social problems, school physical environment, parent-teacher communication and school parental involvement. Analytically, the author's estimate two sets of five OLS regressions to determine the influences on PIAT for Mathematics and reading. Each set initially controls for prior PIAT score. PIAT scores are integrated with a staggered set of controls and interactions for Social Capital at home and at school, household income and gender. The staggered addition of these controls and interactions help determine the extent of boosting and compensating effects. Namely, whether Social Capital in one context is amplified in either the presence or absence of the other respectively. The results reveal, as expected, that parental and child Human Capital appears important with respect to determining academic achievement. Furthermore, some differentiation by gender is also apparent, with males appearing to benefit more than females from high

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[156] The US National Survey of Youth is a national longitudinal study which surveys a representative sample of 9,000 US young people, born between 1980 and 1984. Variables designed to capture school capital were added to the survey in 1993/94 and 1995/96 respectively.

ability mothers (as measured by higher Armed Forces Qualification Test scores). The authors conclude that based on their results Social Capital at home and at school appear to work in parallel to either increase or decrease Mathematics and reading achievement.

Crosnoe (2004) contributes to the Social Capital literature by investigating whether the parent-adolescent relationship is associated with academic outcomes and whether school characteristics modify this relationship. To undertake the analysis, the authors use a sample of young people in grades 7-12 (ages 12 to 18) in the 1994/1995 school year from the US National Longitudinal Study of Adolescent Health 1994 (Add Health)[157]. Specifically, the author estimates multi-level models to determine the influences of sweep 1 factors on sweep 2 academic achievement[158]. Presenting six random-intercept and four random-intercept and random-coefficient models. The former contains a random intercept for sweep 2 academic achievement, whilst, the latter also contains a random coefficient for sweep 1 parent-adolescent emotional distance. All models include a set of level-specific controls for family background and parents' educational aspirations and achievement. This is in addition to measures of family-based Social Capital, e.g. parent-adolescent relations, parent-adolescent emotional distance[159] and interaction terms. Furthermore, in the multi-level models, the authors control for: sector (private), educational level and mean school academic achievement. School-based Social Capital is measured by pupil-teacher, parent-child relations (within the school context) and cross-level family-school interactions. This study reports that the parent-adolescent relationship is an important factor in determining academic success, but it is school-specific. The results hint that this relationship affects academic achievement through the facilitation of parental resources. This was shown to be stronger for Asian-Americans and weaker for African-Americans. Furthermore, no evidence for a compensating effect was found with respect to Social Capital at school mitigating any deficiencies in Social Capital at home. Nevertheless, the results show that individuals appear to benefit more (boosting effect) if they possess large endowments of Social Capital in both contexts.

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[157] Add Health study is a nationally representative survey of US adolescents in grades 7 to 12 (ages 12 to 18) in the 1994/1995 school year containing information on approximately 90,000 individuals.

[158] Academic achievement consists of self-reported grade-point-averages in sweeps 1 and 2 in four school subjects: Mathematics, Science, English and Social Studies.

[159] Parent-adolescent emotional distance is a scale variable which consists of five composite variables. This was created for the Add Health by Crosnoe & Elder (2004). The five composite measures are: lack of bonding with adolescent, lack of bonding with parents, communication, activities with parents and family cohesion. Lack of bonding with adolescent is reported by the parent whereas the remainder were reported by the child.

Hoffman & Dufur (2008) investigate the association between family and school resources with respect to rates of youth delinquency. To conduct their investigation, the authors utilise two samples of youths; the first was derived from the NELS, with the second derived from the Add Health. In order to make their samples consistent, the authors opt to include only those students in ninth through to twelfth grade (ages 14 to 18). Analytically, the authors utilise a weighted multi-level framework to estimate rates of youth delinquency in order to account for school attended and sampling bias. The authors' measure of delinquency is a normally-adjusted scale computed from 11 variables from the NELS and 13 from the Add Health. The 11 variables used from the NELS relate to drug/alcohol abuse, physical confrontations, suspension from school, criminality and absconding from home. Moreover, the 13 variables used from the Add Health relate to stealing, vandalism, trespassing and absconding from home. Empirically, the authors compute two sets, with like-for-like models estimated using first the NELS and then Add Health data, of random-intercept and random-coefficient models. All models contain a random intercept for each school, in addition to three random coefficients, namely: parent-child attachment[160], involvement[161] and supervision[162]. These are the author's principal measures of family-based Social Capital. The second set additionally contains cross-level interaction terms. Furthermore, the model also controls for individual, family background and individual-level interactions (individual achievement, parental attachment, involvement and their child's academic-values). School level controls[163] are also included. To capture school-based Social Capital, the authors include a measure of school quality which is based on the student's perceptions of the school community. The results suggest that high quality schools can act as a substitute for low parent-child attachment. Therefore, there is evidence that Social Capital at school can help to compensate for low Social Capital at home. The results also show that strong academic values, combined with Social Capital at school, can help to limit delinquency, even if the home environment is conducive to delinquent

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[160] Parental attachment scale is constructed from the summation of five variables in the NELS and eight in the Add Health. These variables are reported by the child and relate to whether the child gets along with parents, likes them, feels understood, is treated fairly by them and whether he or she believe they are a disappointment to them.

[161] Parental involvement scale is constructed from nine variables in the NELS and five in Add Health. These variables relate to frequency with which parents attend school meetings, events, and volunteer in addition to whether parents discuss with teachers: curriculum, activities, material covered, attainment, preparation for SAT/ACT and college attendance.

[162] Parental supervision is operationalised by five variables, all of which relate to the degree to which parents monitor their children's activities, namely: who their child's friends are, use of free time, what they spend their money on, where they go after school and of an evening.

[163] School-level controls included: sector, situated within a rural/suburban/urban setting, size, ethnic makeup, percentage of pupils eligible for free/reduced priced lunch, academic emphasis and school safety.

behaviour. Nevertheless, rates of delinquency are lowest when Capital at home and at school are both higher, indicating the existence of boosting effects.

Dufur et al. (2013b) set out to establish whether contextual Social Capital is associated with academic achievement. To conduct their analysis the authors, implement a multi-level SEM on a sample of 12th grade (age 17 to 18) participants drawn from the NELS. The authors specifically test four main hypothesises to determine the composition of Social Capital and its relationship with achievement: first, whether Social Capital is best operationalised as a singular context; second, if Social Capital is best operationalised as working in two separate contexts, at home and at school; third, Social Capital is operationalised into home and school contexts but includes a third factor reflecting capital created jointly between home and school; finally, whether Social Capital is best operationalised as two distinct contexts at home and at school but some indicator variable are more strongly related to one context or the other. The confirmatory factor analysis suggests that Social Capital is best viewed as two separate contexts. However one indicator, extra-curricular activities, did appear to load onto both contexts. Therefore, the fourth operationalisation of Social Capital was shown to be preferred. Adopting this structure, the authors operationalise Social Capital at home using parental trust in child, discuss issues with parents, parent checks student homework, parents attend school meetings and participates in school events. Social Capital at school is operationalised using student participation in extracurricular activities, school contacts parent, high teacher morale, low conflict between teachers and administrators, teachers respond to individual needs and school environment. The authors then explored the association between these contextual sources of Social Capital and standardised test score achievement in English, Mathematics and Science. Their results suggest that both Social Capital contexts exhibit positive associations with academic attainment, even after controlling for individual, family background and school characteristics. Social Capital at home was, however, found to exhibit the larger effect[164].

Dufur et al. (2013a), adopting a very similar procedure (although a single-level) to Dufur et al. (2013b), sought to establish the extent to which contextual Social Capital is negatively associated with alcohol and marijuana use. As in Dufur et al. (2013b), whilst controlling for demographic characteristics, the authors test the same four hypotheses. Likewise, the authors find that the fourth hypothesis (Social Capital is best viewed as

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[164] The path analytic format of SEM enables Dufur et al. (2013b) to come to this conclusion.

two separate contexts, but some variables load onto both contexts) is preferred. Confirmatory analysis suggests the Social Capital at home is operationalised by five variables and Social Capital at school by seven. For Social Capital at home, these are: discuss issues with parents, parent checks homework, parental child trust, parent school meeting and event attendance. For Social Capital at school the variables are: child participation in extracurricular activities, school-parent communication, school environment, teacher-student ratio, teacher-administrator conflict, teachers' morale and teacher responsiveness to individual needs. Adopting the latter structural form and operationalisation; the authors then estimate a multi-level explanatory model (due to the incorporation of school characteristics). The results reveal that Social Capital at home has a negative and statistically significant association with both alcohol and marijuana use. Specifically, parental discussion with child, attendance at school events and supervision of homework suggests a strong preventative impact. Social Capital at school, on the other hand, exhibits a negligible negative association. Therefore, it would appear that Social Capital at home is the more important facilitator of youth anti-drug and -alcohol social norms.

Dufur et al. (2015) looks at whether Social Capital in the family and at school are associated with youth delinquency. To conduct the analysis the authors utilise a sample (merged data 7th to 12th grade) of participants to the Add Health. Analytically, the authors adopt an SEM framework by outlining a measurement model with respect to peer and own delinquency. Confirmatory factor analysis revealed that family Social Capital is best operationalised as three latent factors. These were: mother-, father-child warmth and discussions with child about school-related topics. Social Capital at school, on the other hand, was best operationalised through variables relating to sense of school community and teachers treat students fairly. They use these to then estimate two explanatory models. The first, explores the influences of Social Capital in the family and at school on youth delinquency. The second, determines whether the associations remain once other factors are added, namely: peer delinquency, family characteristics (parental education, English as a first language, parental income and dual-parent household) and adolescent characteristics (GPA, gender and ethnic group). The author's findings, as expected, reveal that although both Social Capital in the family and at school both appear to act to reduce rates of youth delinquency; Social Capital in the family is found to exhibit the larger impact. Moreover, the author's results imply the impact is roughly twice as large in comparison to any other included variable. Furthermore, this association remains (even getting marginally larger) after the addition of the other explanatory variables. However, although the Social Capital at school association diminishes it remains positive and statistically significant.

In this sub-section we conducted a review of a number of recent contributions to the contextual Social Capital literature. Arguably, Parcel & Dufur (2001) began this trend by differentiating Social Capital by the context in which it was created, e.g. at home and at school. In their study the authors operationalise Social Capital at home through the home environment, parental supervision, employment status and active participation in religion. Social Capital at school is operationalised through measures designed to gauge the school environment and school social problems. On the other hand, Dufur et al. (2013a; 2013b) use SEM to determine the preferred composition of Social Capital. Their analysis suggests that the concept is best operationalised as two contexts, at home and at school, although an indicator (extracurricular activities) did appear to cross-load. Social Capital at home was operationalised through indicators relating to the parent-child relationship, parental supervision and involvement with school. Moreover, Social Capital at school was operationalised through parent-school contact, pupil-teacher relationship and the school environment. Separately, Crosnoe (2004) and Dufur et al. (2015) focus their operationalisation on Social Capital in the family as opposed to at home. Specifically, Crosnoe (2004) operationalised Social Capital in the family through parent-child relations and emotional distance. Likewise, Dufur et al. (2015) focuses on parent-child relationship and discussions with parents about school. For Social Capital at school, Crosnoe operationalises the concept through pupil-teacher relations and parent-child relations (within a school context). On the other hand, Dufur et al. (2015) operationalises Social Capital at school through a pupil’s sense of school as a community and teachers treat pupils fairly.

To conclude, Social Capital at home and at school appears to exhibit separate positive associations with a range of youth outcomes (Parcel & Dufur, 2001; Crosnoe, 2004; Hoffmann & Dufur, 2008; Dufur et al., 2013a; 2013b; 2015). Moreover, Dufur et al. (2013a; 2013b; 2015) present evidence that suggests Social Capital in the home appears to be the more influential of the two with respect to boosting academic outcomes or reducing incidences of delinquent behaviour. However, there is some debate surrounding the interaction of contextual sources of Social Capital with respect to youth outcomes. For instance, Crosnoe (2004) found no evidence of a compensating effect with respect to academic outcomes. Conversely, Hoffmann & Dufur (2008) do find evidence suggesting that higher levels of Social Capital at school might compensate for lower levels of family-based Social Capital in the case of youth delinquency. Nevertheless, both studies find evidence of boosting effects, which implies the impact of contextual sources of Social Capital is amplified when an individual possesses high endowments of both.

4.2.4 Summary

In this literature review we summarised a number of contributions to the Habitus, aspirations-expectations-achievement and contextual Social Capital literature. Wildhagen (2009) indicated that Habitus serves a social mobility function, rejecting Bourdieu's & Passeron's (1977) CRT. Furthermore, Gaddis (2013) found that Habitus appears to largely mediate the Cultural Capital association. According to his analysis, levels of educational attainment are more heavily influenced by Cultural Capital for women but by Habitus for men. To explain this, Dumais (2002) hypothesises that young men may downplay their Cultural Capital in order to avoid looking effeminate in the eyes of their peers (gender socialisation). We also discussed a parallel strand of literature surrounding aspirations-expectations-achievement. Anders & Micklewright (2015) found that the size and pattern of aspirations and expectations over the educational process appears to be dependent on family background. Expectations of HE participation appear to start lower and fall fastest for those from more deprived backgrounds. This may have interesting implications for the impact of non-cognitive ability on educational aspirations and attainment by socioeconomic status. Lastly, we reviewed some recent contributions to the contextual Social Capital literature. Dufur et al. (2013a; 2013b) found that Social Capital is most appropriately operationalised in two separate contexts, namely at home and at school. Social Capital at home or in the family was found to exhibit the stronger association with respect to academic achievement and youth delinquency. Nevertheless, both Social Capital at home and at school exhibit positive and significant associations with a range of youth outcomes. Moreover, in some cases these associations were found to be even larger if individuals possess high endowments of both (evidence of boosting effects). Some debate however remains regarding compensating effects.

4.3 Methodology

This chapter builds on the analysis developed in our first empirical chapter: firstly, by exploring influences affecting youth HE participation for a more recent cohort of young people; and secondly, by including a measure of Habitus and two additional contextual sources of Social Capital. We include a measure of Habitus to capture a young person's perception of their academic ability and aspirations for further study post-compulsory education. We are also interested to see if the inclusion of Habitus mediates any observed association between Cultural Capital and HE participation. In this way, we address the concerns raised in the related literature that the omission of Habitus may positively bias the implied impact of Cultural Capital. Moreover, the addition of two further contextual sources of Social Capital, at home and at school, allows us to build up a more comprehensive picture of how social dynamics might influence educational attainment.

To conduct our analysis we use a recent cohort of HE entrants derived from the LSYPE. To our knowledge, this is the first UK study to operationalise Cultural Capital, Habitus and contextual sources of Social Capital into a single empirical study. Moreover, studies investigating Cultural Capital and Habitus or contextual Social Capital associations with respect to educational and youth outcomes, for the most part, use either US or Scandinavian longitudinal data. This is important because significant structural differences between the US and UK education sectors may render the findings of studies conducted in the US less applicable to the UK. Moreover, as we previously mentioned, the UK HE participation literature has largely focused on the importance of individual and background characteristics in explaining trends in HE. Therefore, investigating cultural and social influences represents an interesting avenue of research. As a consequence this work may also hint at an underutilised avenue for achieving WP objectives and contribute to the development of more effective policy initiatives. We begin this section by justifying our use of the LSYPE. Then we discuss specific non-response and attrition issues with the data. We then outline our modelling approach and elaborate on our operationalisation procedure with respect to constructing our measure of cognitive ability, Cultural Capital, Habitus and contextual Social Capital.

4.3.1 Data

The LSYPE[165] is the natural choice given the aims of this study. Anders (2012b) argues that the LSYPE has large potential to shed new light on HE participation. The LSYPE covers a recent educational cohort (born between 1989 and 1990) and the data is relatively rich in variables that could be used to indicate an individual’s Habitus and contextual sources of Social Capital whilst offering a practical sample size. Moreover, the data contains detailed early educational attainment data, through matching sample

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[165] We utilise sweeps 1 to 7 in the LSYPE, 2004 to 2010. The specific study number is 7104.

responses with their NPD entries. It also contains a number of school-level variables, through linkage with the PLASC. Lastly, the study also has the virtue of being the only major longitudinal study that covers HE participation since the implementation of tuition fees.

The LSYPE (now referred to as Next Steps[166]) began with a survey of 15,700 young people in England. Participants were selected from an original sample of 33,000 year 9 (age 13 to 14) school children in February 2004. These children attended either maintained, independent schools or pupil referral units in England. The LSYPE employed a two-stage stratified sampling procedure. Schools acted as the primary sampling unit with pupils then selected and surveyed. Certain ethnicities, i.e. Indian, Pakistani, Bangladeshi, black-African, black-Caribbean and mixed ethnicity were oversampled to achieve a target of 1,000 participants per ethnic group. Maintained schools were oversampled by a factor of 1.5 with respect to their degree of deprivation, whereas independent schools were stratified with respect to the proportion of students achieving five or more A*-C GCSEs by age 16. In total, 838 schools were selected from the maintained sector with 52 from the independent sector yielding a final sample of 21,000[167] young people.

Six additional sweeps of the LSYPE were conducted: sweep 2 (2005), 3 (2006), 4 (2007), 5 (2008), 6 (2009) and 7 (2010). The main topics[168] covered varied by sweep, with parental attitudes not included after sweep 4, family background was omitted from sweep 6 and main activity (post-compulsory schooling) for the young people included in sweep 7. A variety of methods were used to gather responses. In sweeps 1 to 3, both the young person and their parents/guardians were interviewed together (where possible). Sweep 4, occurred similarly, except only one parent/guardian was interviewed. For sweeps 5 to 7 multiple approaches were adopted to gather responses, approximately 50% of responses were recorded via telephone interviews, 36% online and 14% via face-to-face interviews with interviewers. Participants were incentivised through the provision of a small denomination of high-street vouchers. Sweep 4, unlike

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[166] The LSYPE was funded and managed by the DfE between 2004 and 2014, culminating in sweep 7 in 2010 (age 19 to 20). In 2014 it was agreed that the Centre for Longitudinal Studies (CLS), a subsidiary of the Institute of Education at University of London, take over management of the study (renamed Next Steps) with funding from the Social Research Council.

[167] School-level non-response was a specific problem, particularly in inner-London where only 57% of schools responded compared with 73% for the rest of England.

[168] The DfE's ‘Interactive LSYPE’ website proved to be a useful resource when assessing which variables were available in which sweep. The website allows users to browse for specific variables, providing both explanations and basic tabulations.

the other sweeps, was complemented by an ethnic boost (600 additional potential black-African and black-Caribbean participants). Sweeps 4 and 5 also saw a small number of previous non-respondents ask to re-join the study.

In this study we use the secure access version of the data. Primarily, as the licensed version did not contain sufficient detail to adequately control for individual and family background characteristics. For instance, the secure access version contains further dimensions, such as a young person's eligibility for FSM, a detailed breakdown of their test scores, geographical variables with lower levels of geography and IMD score. In addition to this, we secured a number of variables[169] from the Longitudinal Surveys Team[170] at DfE to complement our analysis.

Our estimation sample is comprised of all those participants who responded in sweep 7 with a valid HE participation indicator. We exclude independent school pupils because these schools were not required to take Key Stage (KS) 2 national test scores[171]. These were needed to construct our proxy for cognitive ability. With these restrictions, our sample contains information on 4,817 individuals. We generate our binary measure of HE participation using two variables: HE Qualification being studied at 18 (sweep 6) and 19 (sweep 7) respectively. Anders (2012b) places HE participation at 43.3%, whilst official DfE figures using Youth Cohort Study and LSYPE participants place it at 40% (DfE, 2011). Nationally, the HEIPR20 yields a participation rate of 37.6% for the 2010/11 academic year (BIS, 2017b). To help ensure that our sample is representative with respect to rates of HE participation we weight our sample, employing a probability weight sourced from the DfE which excludes the ethnic boost and sweep 5 non-respondents. Weighting our estimation sample (*n.* 4,817) places HE participation at 40% (based on a population size of *p.* 4,697), which is consistent with the DfE's estimate.

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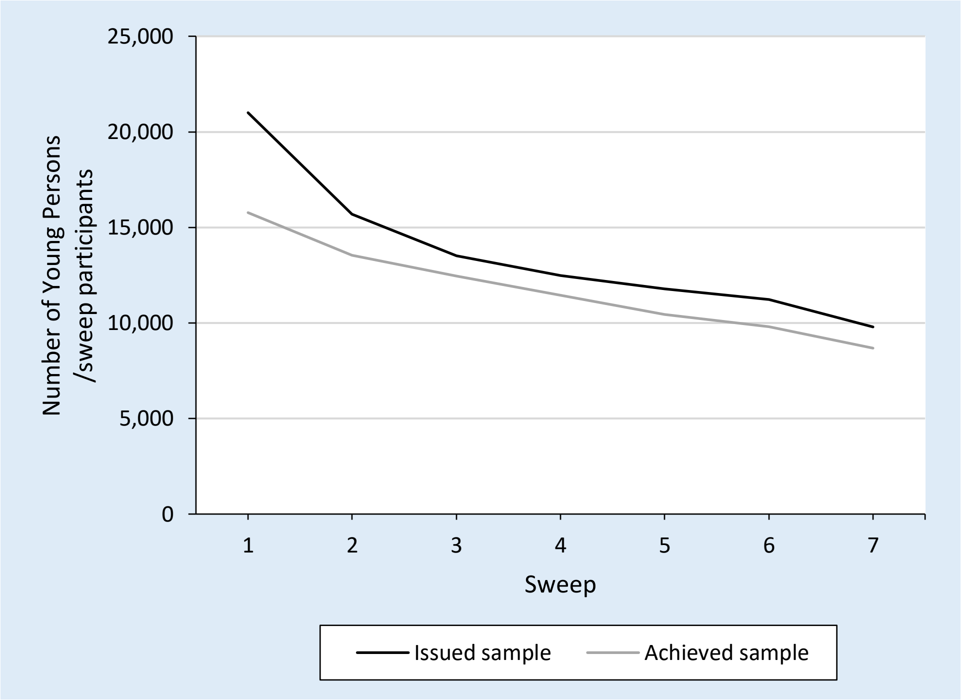
[169] A number of variables were sourced in this way and used in the corresponding analysis: LSYPE Index File (go-to reference file for the LSYPE), sweep 1 variables (familial highest educational qualification level, employment status and household income), sweep 7 probability weight (excluding the ethnic boost), gender and birth month/year (sourced from the NPD).

[170] Specific thanks to Tim Thair who facilitated this process. He always endeavoured to respond to my emails promptly and was happy to be contacted by telephone if necessary.

[171] Non-maintained secondary schools in the UK are not required by law to undertake KS3 examinations. Many undertake their own internal assessments to ascertain students' progress.

4.3.2 Bias and non-response in the Longitudinal Study of Young People in England 2004

The LSYPE was designed to be a representative sample of young people in England. Unavoidably, survey participants dropped out from the study through the various sweeps. Figure 17 illustrates the difference between the issued and achieved sample for each sweep.



Source: DfENSR (2013) p.13

Figure 17: Sample attrition in the Longitudinal Study of Young People in England 2004, sweeps 1 to 7.

Figure 17 implies that the response rates in sweep 1 through to 7 were: 74%, 86%, 92%, 92%, 88%, 87% and 90% (DfENSR, 2013). These percentages (rounded to the nearest percentage point) are calculated as 100 divided by the initial sample multiplied by the achieved sample. These calculations are somewhat complicated by the presence of partial responses, i.e. the young person or their parent either did not respond when the other did or provided only a partial response to the survey. Plus we also have the addition to the initial sample resulting from the sweep 4 ethnic boost[172]. More generally, with the

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[172] In sweep 4 the issued sample was boosted by sending out surveys to an additional 600 individuals of which 59% responded.

exception of the first sweep, response rates were fairly high and uniform across sweeps. Inevitably by sweep 7, the sample had fallen by approximately 45% to 8,682 participants including the ethnic boost. Although significant loses have occurred, this is not uncommon in longitudinal surveys such as the LSYPE. Dropout in itself, is not a problem if purely random. Typically, however, dropout from longitudinal surveys such as the NCDS, BCS70 and LSYPE have all been shown to be non-random (Hawkes & Plewis, 2006; Ketende et al. 2010; and Piesse & Kalton, 2009). For instance, it is commonly identified that male participants, ethnic minorities or those with less stable residential arrangements all have higher rates of dropout. If this were left uncorrected higher dropout from these groups would skew the results making them less representative of the general population. Characterising and classifying non-response in the LSYPE is somewhat more difficult than either the NCDS or BCS70. As there are many more types of non-response in the LSYPE resulting from the linkage with the NPD, PLASC and the addition of the ethnic boost in sweep 4. To compound this further, surveys varied in both the sources used (e.g. parents and schools) and methods of collection (e.g. telephone and internet) in later sweeps.

Piesse & Kalton (2009) provide a detailed investigation of the approaches to dealing with the problem of missing data in the LSYPE and recommend a number of strategies to help tackle it. These recommendations were then considered by the DfE with the results made available to researchers. Broadly, these related to sample weighting and mass imputation, both of which are valid tools for dealing with non-response. However it must be said, that although sample weights improve the representativeness of the output, information is lost. Imputation on the other hand, introduces an additional source of measurement error. We utilise both techniques in our analysis by weighting our sample and by using some imputed variables relating to household income, family's highest National Statistics Socioeconomic Classification Class (NS-SEC) and highest educational qualification. These variables were computed and supplied by the DfE Longitudinal Team.

Official guidance recommends LSYPE users apply an appropriate longitudinal or cross-sectional weight, to make their output more representative. To facilitate this, as previously mentioned, the LSYPE does come with cross-sectional and longitudinal weights. The general rule is to apply the survey weight to the analysis from the latest sweep included in any given study. In our case, we employ the sweep 7 cross-sectional weight (which excludes the sweep 4 ethnic boost[173]), given that our dependent variable is sourced from that sweep and was supplied by the Longitudinal Surveys team at DfE. The weight assigns values to 8,234 individuals, approximately 94.84% of sweep 7 participants. Furthermore, the guidance also recommends that, as well as using the appropriate weight, researchers should specify the primary sampling unit and stratification. In practice specifying the primary sampling unit and stratification only affects the confidence intervals of the resulting estimates but not the coefficients themselves. We opt not to do this as we are unable to access the appropriate module in IBM SPSS (which is the software package we use to compute our principal components).

4.3.3 Econometric Model

To determine the cultural and social influences on the probability of HE participation by age 20, we estimate three main models. The first of these includes a set of individual and demographic controls - individual(YP_i), background characteristics (BG_i) and cognitive ability (KS_i). The vector YP_i includes controls for gender[174], month/year of birth[175], ethnic grouping[176], first language, having a declared disability that affects schooling,

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[173] The LSYPE does not contain early educational attainment data for ethnic boost. Given that we compute a proxy for cognitive ability from KS2 test scores, these individuals were omitted from our estimation sample.

[174] Gender was observed in the LSYPE on a sweep-by-sweep basis and imported from external sources such as the NPD. Whilst conducting the analysis, it became apparent that a degree of measurement error seems to have occurred with respect to recording a young person's gender. For instance, after tabulating gender in sweep 1 with the corresponding variable in the index file, we found that 1.5% of young persons' gender records were inconsistent. Given the importance of gender, we compute a measure of 'average gender' based on the number of responses. We limit our computation of gender to observations in sweeps 1 to 4, the DfE Index file and a measure from the NPD. A binary format was then imposed, with those $0 \leq x < 0.5$ allocated as female (0) with those $0.5 > x \geq 1$ allocated as male (1). A small number of observations had an equal number of gender identifiers (0.5), these were omitted from the sample.

[175] As with gender, it became clear when conducting the analysis that there was also a degree of measurement error with respect to recording a young person's month and year of birth. Appropriate variables were sourced from sweeps 1 to 6, secure access data and the DfE Index File. We combine these measures together to create categorical variables ranging from 0 (born before Sept'89), 1 (Sept'89), 2 (Oct'89), … , 12 (Aug'90), and 13 (born after Aug'90). Once computed we then took the modal value. Young people without a definite month and year of birth were omitted from our sample. Specifically, we include a binary measure (0 = Mar'90 to Aug'90; 1 = Sept'89 to Feb'90) as opposed to singular month or quarter indicators. First, it was found that when we included these as separate month and year variables - all the significance appeared to emanate from the first three months. Second, the coefficients for the first three months appeared very similar in magnitude and sign. Conducting appropriate parameter tests, we found we could not reject the null hypothesis that the three latter quarters were significantly different from one another hence these were grouped.

[176] Ethnic grouping was computed from a sweep 1 restricted derived variable "Young person's ethnic group - detailed". We grouped a young person's ethnic group into the following categories: white-British, Indian subcontinent, black-Caribbean, black-African, mixed and other. The data does, however, make further reasonable provision to separate Indian Subcontinent into three

extra tuition in school subjects, and/or supplementary subjects. BG_i includes controls for household income band[177], family's highest NS-SEC[178], family's highest educational qualification attainment[179], government office region[180], IMD[181] whether they reside in a single parent household, number of older and younger siblings. KS_i, our proxy for ability, comprises of three principal components derived from 12 indicator variables. The variables for household income, maternal and paternal NS-SEC and highest educational attainment were sourced from the DfE.

$$\text{HEP} = f(YP_i, BG_i, KS_i) \qquad \textbf{(10)}$$

The second model builds on the first by incorporating principal component based measures of Cultural and Social Capital, we call these Cultural Capital (CC_i) and Social Capital - young person networks ($SCYPNET_i$). Both were designed to, as closely as possible, replicate, the measure we included in our first empirical chapter subject to data limitations.

$$\text{HEP} = f(YP_i, BG_i, KS_i, CC_i, SCYPNET_i) \qquad \textbf{(11)}$$

The third model, includes additional measures of Habitus (HAB_i) and contextual sources of Social Capital at home ($SCHM_i$) and at school ($SCSCH_i$).

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distinct categories, i.e. Bangladeshi, Indian and Pakistani. Conducting parameter tests on these revealed that we could not reject the null hypothesis hence these were grouped.

[177] Our measure of household income is computed from two derived banded variables "Total income from work, benefits, and anything else for main parent (and partner) - lower bands" and "Total income from work, benefits, and anything else for main parent (and partner) - higher bands". These income band responses were then combined into a single set of bands.

[178] Family's highest NS-SEC was recoded from the derived variable "Family's NS-SEC class (from household reference person)". This variable allowed for the inclusion of both lower and higher managerial & professional family's highest NS-SEC. We however chose to merge these after a parameter test could not reject the null hypothesis.

[179] Highest family's educational qualification attainment is computed from the derived variable "Highest qualification held in family, from either main parent or second parent - grouped".

[180] Government Office Region is taken from sweep 1 and is a restricted variable. We generate a series of dummy variables: North, York & Humberside, Midlands, East of England, London, and South West. The data does however make provision to separate 'North' and 'Midlands' into two sets of distinct categories, i.e. North: North-East North-West and Midlands: East-Midlands West-Midlands. Parameter tests indicated that the coefficients for North-East/North-West and East-Midlands/West-Midlands were insignificantly different from one another and were thus grouped accordingly.

[181] The composite measure of deprivation IMD, measures how deprived a young person's residential local area is. This is calculated on the Lower Layer Super Output Area (of which there are 32,482 in England), each of which consists of between 400 and 1,200 households. IMD is weighted (ODPM, 2004, p.4) with respect to income (22.5%), employment (22.5%), health & disability (13.5%), education, skills & training (13.5%), barriers to housing & services (9.3%), crime (9.3%), and living environment (9.3%).

$$\text{HEP} = f(YP_i, BG_i, KS_i, CC_i, HAB_i, SCYPNET_i, SCHM_i, SCSCH_i) \qquad \textbf{(12)}$$

All equations estimate the probability of HE participation to degree level or above using a weighted logistic (logit) model[182]. Moreover, we also re-estimate models 2 and 3 by including the underlying indicator variables for Cultural Capital, Habitus and contextual Social Capital - as opposed to our principal component based measures. All models are also estimated for our estimation sample, male and female subsamples. In the following subsections we discuss how we operationalised our measures for cognitive ability, Cultural Capital, Habitus and contextual sources of Social Capital.

4.3.3.1 Operationalising cognitive ability

In our first empirical chapter we constructed our measure of cognitive ability using the approach outlined in Galindo-Rueda & Vignoles (2005). Here too we adopt a similar methodological procedure, but this time use subject-specific competence test scores (as opposed to tests designed to deduce cognitive ability), to construct our measure of cognitive ability (KS_i). However, it is important to point out here that, although these indicators are likely to be strongly correlated with tests designed to specifically capture cognitive ability, conceivably they will also be more prone to contamination from the impact of schooling. This implies, given the socioeconomic gap, that the true effect of ability may be higher than our model suggests.

We conduct PCA on KS2 national test component scores (age 10 to 11) in English, Mathematics and Science. In addition, we also include three binary variables which indicate whether the student took the level 6 extension paper in each subject[183]. PCA is then performed on these variables. Table 7 provides the full list and structure matrix for the estimation sample. For consistency and robustness purposes, Appendix 8.9 (as does 8.10 through 8.14 - to be discussed) contains 3 additional descriptions of PCAs. Two of the three additional PCAs were produced using male and then separately female subsamples with the remaining PCA using all those participants who provided full information to these questions at sweep 1.

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[182] As all of our explanatory variables are drawn from the individual-level, there is no need to employ a multi-level modelling strategy. A common alternative, given the two-stage stratified sampling design, would be to employ cluster robust standard errors. This option is, however, not possible when probability weights are applied.

[183] National attainment guidelines require that approximately 60% of junior school pupils within a school should achieve a level 4 by the end of KS2. Most students, take the level 3 to 5 paper. Some exceptional students, take the supplementary level 6 paper in one or more of the subjects.

Table 7: Key Skill indicator variables and structure matrix for our estimation sample, sourced from the Longitudinal Study of Young People in England 2004

Structure matrix – Key Skill			
LSYPE – Aged between 10 and 11	**Principal components**		
Indicator variables	'Technical Skill'	'Gifted & Talented'	'Literacy Skill'
1. KS2 English test - Handwriting score			0.832
2. KS2 English test - Writing score	0.584		0.754
3. KS2 English test - Reading score	0.800		0.585
4. KS2 English test - Spelling score	0.631		0.674
5. KS2 Mathematics test – Paper 1 score	0.904		0.414
6. KS2 Mathematics test - Paper 2 score	0.908		
7. KS2 Mathematics test - Mental arithmetic score	0.862		
8. KS2 Science test - Paper A score	0.848		
9. KS2 Science test - Paper B score	0.865		
10. KS2 English - Extension paper attempted		0.784	
11. KS2 Mathematics - Extension paper attempted		0.768	
12. KS2 Science - Extension paper attempted		0.764	

Table notes: With the exception of the indicators for whether the young person attempted the KS2 extension papers in English, Mathematics and/or Science which are binary, all variables are numerical. Unfortunately we are prevented from offering the reader a sense of how English – Writing score and English – Reading score are coded as this would pose a disclosure issue due to the minima/maxima values containing less than 10 unweighted observations. We are however able to provide the maximum values for the remaining variables, these are: 5, 10, 40, 40, 20, 40, and 39 respectively.

After performing PCA on these 12 indicator variables, we extract three principal component using the Direct Oblimin rotation[184] and Anderson-Rubin extraction methods[185]. As the structure matrix in Table 7 reveals, Mathematics and Science KS2 test scores load most highly onto our first extracted principal component. Although, reading and spelling score KS2 English test score components do also feature with a loading in excess of 0.4. We call this component 'Technical Skill'. Additionally, whether the individual took KS2 extension tests in either English, Mathematics and/or Science load most highly onto our second component. We call this component 'Gifted & Talented'. Lastly, all English test scores, with the indicator variable Mathematics test paper 1 also featuring, load most highly onto our third component. This component we call 'Literacy Skill'. It is important to point out that, we observe some movement in the importance of the loadings of specific variables in the PCA conducted on male and female subsamples. For instance, in the case of our male subsample the indicator for mental arithmetic score also loads onto the component 'Literacy Skill'. Whereas, we see no Mathematics scores loading onto this component using our female subsample. See Appendix 8.9 for a full description of the PCA analyses.

4.3.3.2 Operationalising Cultural Capital

In the previous empirical chapter, we operationalised Cultural Capital by using six indicators from the NCDS and seven from the BCS70. These indicators, which recorded parental and teacher responses, related to parental outings with the cohort member and reading habits. We adopted this approach that had elements similar to Kaufman & Gabler (2004), De Graff et al. (2000) and Kalmijn & Kraaykamp (1996); because the data was reasonably rich with respect to cultural educational resources, child's interest in literature and general media. In this chapter we would have liked to emulate this in order for the results to be more comparable with our earlier work. Surprisingly, despite the richness of the LSYPE in other areas, the dataset is comparatively poor in Cultural Capital indicators, particularly those relating to young peoples' interest in general media. Although, our measure in this chapter does specifically account for playing a musical instrument and combines going to the cinema, theatre and concert rather than outings, walks or visits. Nevertheless, and similar to our first empirical chapter, the data sources

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[184] Direct Oblimin is preferred to Varimax when individual variables appear in the pattern matrix to load strongly onto multiple principal components.

[185] The Anderson-Rubin method is preferred, despite the ease of interpretation of the regression method, as it ensures factor scores are uncorrelated.

did not did not offer much insight into a child's degree of cultural knowledge, fluency with modes of expression, cultural goods in home and parental Cultural Capital.

We operationalise our measure of Cultural Capital by performing PCA on three indicator variables, which relate to participation in cultural activities such as: reading for pleasure, gone to a cinema, theatre or concert in last four weeks and played a musical instrument in last four weeks. Two of these were binary (0 'No' and 1 'Yes'), namely playing a musical instrument and going to the cinema, theatre or concert whereas reading for pleasure is ordinal (0 'Never' to 5 'Most days'). Thus our approach most closely resembles Gaddis (2013), Dumais (2002) and De Graaf et al. (2000); who operationalise their respective measures of Cultural Capital via participation in specific cultural activities, reading and lessons in high culture.

In each of the four separate PCAs for Cultural Capital, we use the regression extraction method to compute a single principal component. The un-rotated component matrix (due to their being only one component extracted) indicates that playing a musical instrument has the highest loading, followed by reading for pleasure and having gone to a cinema, theatre or concert. As such and in the absence of a richer set of indicators we call the extracted principal component 'Cultural Capital'. In the previous empirical chapter due to the richer provision of indicators, PCA resulted in 3 components being extracted which we called 'Cultural Participation', 'Interest in Literature' (NCDS)/'Extended Literary Works' (BCS70) and 'Engagement in Media'. Thus our extracted component for the LSYPE can be considered an amalgamation of the former two principal components. See Appendix 8.10 for a full description of the PCA analyses.

4.3.3.3 Operationalising Habitus

To justify our choice of indicators for operationalising Habitus, let us first recall that Gaddis (2013) includes composite measures of self- perception and/or confidence in a pupil's ability to do schoolwork and the participant's views on the role education plays in later job-market success and life satisfaction. On the other hand, Horvat & Davis (2011) in a qualitative study, gain a sense of young peoples' Habitus by focusing on their self-esteem, accomplishment and contribution to the welfare of others. Separately, Wildhagen (2009) operationalises Habitus through including a measure of the participants' educational expectations. Furthermore, Dumais (2002) operationalises the concept through a student's future occupational expectations. As this study aims to determine the influences on HE participation, our choice of indicators resembles those chosen by Wildhagen (2009). Specifically, we opt to operationalise Habitus by conducting PCA on eight indicator variables, which relate to intentions for FE and HE, self- and teacher-perceptions of their subject-specific ability. Generally, we were satisfied with how we measured a young person's Habitus. However, it would have been interesting to experiment with occupational expectations at age 13/14, which was not asked (although whether they wanted to own their own business and what they expected to be doing in 12 months' time were asked in sweep 3). As this might elude to whether a young person saw a degree as a stepping-stone to their desired career. Table 8 provides the full list of the indicators used to operationalise our measure of Habitus and structure matrix for the estimation sample.

Table 8: Habitus indicator variables and structure matrix for our estimation sample, sourced from the Longitudinal Study of Young People in England 2004

Structure matrix – Habitus		
LSYPE – Aged between 13 and 14	**Principal components**	
Indicator variables	Academic Self-Perception	Aspirations for Further Study
1. (Young person) How good young person thinks young person is at school work		
2. (Young Person) How good teachers think young person is at school work	0.822	
3. (Young Person) How good or bad young person considers themselves at this subject: ICT	0.595	
4. (Young Person) How good or bad young person considers themselves at this subject: English	0.617	
5. (Young Person) How good or bad young person considers themselves at this subject: Mathematics	0.793	
6. (Young Person) How good or bad young person considers themselves at this subject: Science	0.400	0.417
7. (Young Person) Likelihood of young person getting into university if apply[186]	0.403	0.756
8. (Young Person) Young person's intentions after Year 11		0.836

Table notes: All these variables are ordinal. The first and second variables are coded as 1 'Not at all good/below average' to 4 'Very Good'. The following four variables are coded as 1 'No good at all/not very good' to 3 'very good'. The seventh variable is coded as: 0 'leave full-time education', 1 'Leave full-time education by return later' and 2 'Stay in full-time education'. Lastly, variable 8 is coded as: 0 'Not at all likely' to 3 'very likely'.

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[186] The variable 'Young person: Likelihood of young person getting into university if apply' is actually derived using responses to both 'Young person: Likelihood of young person applying for university' and 'Young person: Likelihood of young person getting into university if apply'. Specifically, for those individuals who rate their respective chances of applying for university as zero, we recode these observations as having a zero chance of getting into university. For the interested reader, Anders & Micklewright (2015) discuss these variables at length.

After performing PCA on these 8 indicator variables, we extract two principal components using the Direct Oblimin rotation and Anderson-Rubin extraction methods. We can see from Table 8 that the variables relating to the young persons' own sense of their ability to complete school work (both generally and with respect to specific subjects), in addition to their assessment of their teachers' perceptions, load most highly onto our first principal component. We call this component 'Academic Self-Perception'. We also observe from Table 8 that the variables relating to intentions after year 11 and likelihood of getting in to university if they were to apply load most highly onto our second component. We call this component 'Aspirations for Further Study'. See Appendix 8.11 for a full description of the PCA analyses.

4.3.3.4 Operationalising contextual Social Capital

Here we discuss how we operationalise our measures for contextual Social Capital, namely Social Capital – young person networks, at home and at school. In our earlier empirical chapter, we operationalised Social Capital by performing PCA on five indicators from both the NCDS and BCS70. These indicators related to how the cohort member spends their leisure time, e.g. alone, involved in a general interest, sports club, frequency of meeting friends, etc. In this earlier data we were unable to capture Social Capital specifically in the home and school contexts, because the datasets did not contain sufficient information on parent-child, child-teacher and parent-teacher relations. Nor were we able to map adequately a child's (or parents') social networks, instead opting to proxy for the concepts by focusing on leisure activities, peer interaction and recreation. This most closely resembled Bianchi & Robinson (1997) and Stanton-Salazar (1995).

In a similar fashion, we operationalise our first form of Social Capital, which we now refer to as Social Capital - young person networks by performing PCA on seven indicators. These indicators relate to participation in sport, extracurricular activities and local neighbourhood based peer interactions. Whilst this will capture social networks, our measure of Social Capital could be critiqued as inadvertently capturing aspects of non-cognitive traits (social competences) and personality (openness to experience and agreeableness). Our operationalisation approach here is not directly comparable with our earlier work because the LSYPE does not contain sufficient information on whether the young person likes their own company. Our choice of indicators in the LSYPE, therefore, most closely resembles Stanton-Salazar & Dornbusch (1995). Who partially operationalise their measure of Social Capital using variables related to recreational activities and peer interactions. Table 9 provides the full list and rotated component matrix for the estimation sample.

Table 9: Social Capital – young person networks indicator variables and rotated component matrix for our estimation sample, sourced from the Longitudinal Study of Young People in England 2004

Rotated component matrix – Social Capital – young person networks		
LSYPE – Aged between 13 and 14	**Principal components**	
Indicator variables	Outgoing	Social Participation
1. (Young Person) Frequency of doing sports		
2. (Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco		
3. (Young Person) Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration		0.682
4. (Young Person) Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)		0.730
5. (Young Person) Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.635	
6. (Young Person) How many times gone out with friends in last 7 days	0.827	
7. (Young Person) How many times young person had friends round to house in last 7 days	0.763	

Table notes: Variables one, six and seven are ordinal with the remainder binary. The binary variables are coded as 0 'No' and 1 'Yes' whereas the first variable is coded as 0 'Never' to 5 'Most Days'. Furthermore, variables six and seven are coded from 0 'None' to 3 '6 or more times'.

After performing PCA on these seven indicator variables, we extract two principal components using the Varimax rotation with the Anderson-Rubin extraction methods. We see from Table 9 that the variables related to visits to friends' homes, friend visits to own home and unstructured play in the local neighbourhood load most highly onto our first principal component. We call this component 'Outgoing'. Additionally, we also observe from Table 9 that the variables related to more structured activities, e.g. going to a youth club or political meetings, marches, rallies and demonstrations load most highly onto our second component. We call this component 'Social Participation'. However, we should also point out that neither frequency of doing sports or going to a party, dance, nightclub or disco exhibits a loading in excess of 0.4 using our estimation sample. We also observe some minor differences when we conduct PCA separately using our male and female subsamples. For instance young men going to a party, dance, nightclub or disco now features for the component 'Social Participation' with a loading just in excess of 0.4. Conversely for young women, this variable only just features for the component 'Outgoing' whilst frequency of doing sports now features for the component 'Social Participation'. Furthermore, recall in our prior empirical chapter that we extracted three components for Social Capital in the NCDS and three more for the BCS70. We called these components 'Social Participation', 'Structured Participation' (NCDS)/'Outgoing' (BCS70) and 'Introversion' (NCDS)/'Social Independence' (BCS70). From the rotated component matrix loadings our LSYPE component 'Outgoing' is akin to our NCDS/BCS70 component 'Social Participation'/'Outgoing' whereas our second component 'Social Participation' is akin to 'Structured Participation'/'Social Participation' components. See Appendix 8.12 for a full descripting of the PCA analyses.

In order to justify our choice of indicators for our two additional contextual sources of Social Capital, at home and at school. Recall that Dufur et al. (2015), who used confirmatory factor analysis, found that family Social Capital was best operationalised by indicators relating to mother-, father-child warmth and discussions with child about school related topics. Moreover, Social Capital at school was found to be best operationalised by indicators relating to sense of school community and teachers' treatment of pupils. Hoffmann & Dufur (2008) and Crosnoe (2004) similarly elect to use indicators relating to parent-child interactions with a focus on education for family Social Capital. Moreover, both contributions account for school by including school-level characteristics. Furthermore, Parcel & Dufur (2001) operationalise Social Capital in both contexts by using indicators relating to the home environment, parental supervision, religious participation, family size, marital status, maternal working hours and school characteristics.

The LSYPE data proved rich in indicators relating to child activities, parental involvement with child's schooling, attendance of school events and parental child supervision. Moreover, the data also contained indicators relating to whether the school communicates with parents, school environment and teacher responsiveness to individual needs. However, the secure access LSYPE data did not include indicators that might be important to conceptualising Social Capital at home, these included: young person admiration/respect for parents, whether the young person feels respected by parents, and parents provide support to young person and whether young person feels pressurised by parents. Moreover, it also did not contain indicators that might be important to capturing the school environment and conceptualising Social Capital at school, these included: teacher morale, teacher-student ratios, councillor-student ratios, teacher-administrator conflict, exclusion rates and whether school has any social problems. Given this, our choice of indicators most closely resembles that of Parcel & Dufur (2001) and Dufur et al. (2015). Nevertheless, our own operationalisation of the two contexts diverges somewhat from those employed by the aforementioned studies. Particularly, in relation to our choice of variables used to construct our measure of Social Capital at School, as we do not in this investigation, directly control for school characteristics. There are parallels here with the parenting literature and how authors operationalise Social Capital at home. It certainly seems that these same indicators could be used to inform on parenting styles such as the maturity demands of parents and responsiveness.

Nevertheless, we operationalise our measures of contextual Social Capital by using 9 indicator variables for Social Capital at home and 10 for Social Capital at school. Broadly, the 9 variables used to operationalise Social Capital at home relate to: parent's aspirations for young person, parental supervision, parent-child communication and relationship. The 10 variables for Social Capital at school relate to: teacher supervision, teacher responsiveness to learner's needs, parent engagement with their child's schooling, parent involvement with school activities and satisfaction with school. Tables 10 and 11 provide the full list and rotated component matrix for the estimation sample.

Table 10: Social Capital at home indicator variables and rotated component matrix for our estimation sample, sourced from the Longitudinal Study of Young People in England 2004

Rotated component matrix – Social Capital at home			
LSYPE – Aged between 13 and 14	**Principal components**		
Indicator variables	Parent-Child Connectivity	Parental Aspirations for Young Person	Parent-Child Concurrence
1. (Main Parent) What would you like young person to do when reach school leaving age		0.722	
2. (Young Person) How often parents know where young person is going when out in evening		0.568	
3. (Young Person) How many times eaten evening meal with family in last 7 days		0.561	
4. (Young Person) How often talk about plans for future study with - members of family	0.668		
5. (Young Person) Whether anyone at home makes sure that do homework	0.543		
6. (Young Person) How often parents talk to young person about day at school	0.573		
7. (Young Person) How often do you talk of things that are important to young person with parents[187]	0.726		
8. (Main Parent) How well get on with young person			0.768
9. (Young Person) How well do you get on with your parents[188]			0.742

<u>Table notes</u>: All variables are ordinal with the exception of eight and nine which are binary. These are coded as 0 'very badly/fairly badly' to 1 'fairly well/very well'. The first ordinal variable is coded as 0 'Get a full-time job' to 2 'learn a trade/vocational training'. Second variable is coded as 0 'Never' to 5 'Doesn't go out'. The third variable is coded as 0 'None' and 3 '6 to 7 times'. Fourth ordinal variable is coded as 0 'Not at all' to 4 'A lot'. The fifth variable is coded as 0 'Never' to 3 'Every day'. Sixth variable is coded as 0 'Never' to 2 'Often'. Lastly, the seventh variable is coded as 0 'Never/Not at all' and 4 'Most days'.

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[187] This variable was coded to reflect the highest frequency of discussing issues of importance with mother and/or father. The highest overall response was derived from responses to the variables 'Young person: How often talk to (step-) mother about things that matter to young person' and 'Young person: How often talk to (step-) father about things that matter to young person'.

[188] This variable was coded to reflect the highest recorded degree of 'getting on' with mother and/or father. The highest overall response was derived from variables 'Young person: How well get on with (step-) mother' and 'Young person: How well get on with (step-) father'.

Table 11: Social Capital at school indicator variables and rotated component matrix for our estimation sample, sourced from the Longitudinal Study of Young People in England 2004

Rotated component matrix – Social Capital at school				
LSYPE – Aged between 13 and 14	**Principal components**			
Indicator variables	Parent-School Connectivity	Parental Assessment of Schooling	Parental Participation in School Activities	Parental Involvement in School Governance
1. (Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling	0.782			
2. (Main Parent) How often speak to young person's teachers about schooling	0.786			
3. (Main Parent) Satisfaction with: how much interest the teachers show in young person		0.755		
4. (Main Parent) How involved does parent personally feel in young person's school life		0.633		
5. (Young Person) How many of young person's teachers who set homework make sure young person does it		0.556		
6. (Main Parent) Frequency of parent talking to young person about report				
7. (Main Parent) Activities they or partner get involved in: Help out in class			0.758	
8. (Main Parent) Activities they or partner get involved in: Help out elsewhere e.g. library, school trips, dinner duty			0.745	
9. (Main Parent) Activities they or partner get involved in: Parent and teacher associations				0.580
10. (Main Parent) Activities they or partner get involved in: School, parent governor				0.761

Table notes: Seven of the ten aforementioned variables are binary with the remaining three ordinal. The ordinal variables are three, four and five. The third variable is coded as 0 'not at all involved' and 3 'very involved'. Variable four is coded as 0 'not at all involved' to 3 'very involved'. Lastly, variable five is coded as 0 'No teachers' to 4 'All teachers'. Furthermore, the binary variables are coded as 0 'No' and 1 'Yes', 0 'Never' and 1 'at least once a week', 0 'irregular' and 1 'regular' respectively and variables six through 10 0 'Not mentioned' and 1 'Mentioned'.

For both Social Capital at home and at school we conduct separate PCAs using Varimax rotation and the Anderson-Rubin extraction method. We compute three principal components, after performing PCA on the aforementioned variables, for Social Capital at home and four for Social Capital at school.

The rotated component matrix in Table 10 reveals that the indicator variables relating to talking with parents about things of importance to young person, whether parents talk to the young person about future study, talk about their school day and whether parents ensure homework is completed; load most highly onto our first principal component. We call this component 'Parent-Child Connectivity'. Table 10 also reveals that the variables relating to what the young person's parents would like the young person to do after reaching school leaving age, whether parents know where the young person is going out in the evening and number of times family eat evening meals together in the last week; load most highly onto our second component. We call this component 'Parental Aspirations for Young Person'. Lastly, the table also shows that the variables relating to the extent parents get on with young person and young person gets on with parents; load most highly onto our third component. We call this component 'Parent-Child Concurrence'. See Appendix 8.13 for a full description of the PCA analyses.

The rotated component matrix in Table 11 reveals that the indicator variables related to how often the young person's parents speak to young person's teachers about schooling and whether had any specially arranged meetings; load most highly onto our first principal component. We call this component 'Parent-School Connectivity'. Table 11 also reveals that the variables relating to parental satisfaction with the amount of interest shown by teachers in the young person, parental involvement in young person's school-life and the proportion of teachers who make sure that the young-person completes their homework; load most highly onto our second principal component. We call this component 'Parental Assessment of Schooling'. Additionally, the table also reveals that the variables related to parents helping out in class and elsewhere, e.g. library, school trips and dinner duty; load most highly onto the third component. We call this component 'Parental Participation in School Activities'. Lastly, the table also reveals that the whether the young person's parents get involved with parent-governor, parent and teacher associations; load most highly onto our fourth component. We call this component 'Parental Involvement in School Governance'. However, we should point out that the variable relating to frequency of parental and young person discussion surrounding their child's school report does not feature with a loading in excess of 0.4

for any component. Moreover, we also observe some when we conduct PCA using our female subsample. For instance, the component extraction order changes with 'Parent-school participation' extracted before 'Parental Assessment of schooling'. We also see some differences with respect to the loadings for the components 'Parent-school participation' and 'Parental involvement in school governance'. For example, the former is additionally loaded with respect to whether a parent gets involved with parent and teacher associations. This no longer features for the latter, with frequency of main parent talking to young person about report appearing with a loading in excess of 0.4. See Appendix 8.14 for a full description of the PCA analyses.

4.4 Analysis

We begin this section by describing our sample, then assess the goodness-of-fit and select our preferred model before discussing our findings.

4.4.1 Sample descriptive statistics

Table 12 details some important characteristics for our estimation sample, male and female subsamples. We present some key descriptive variables for non- and participants in HE.

Table 12: Weighted descriptive statistics comparing non- and participants in Higher Education using our estimation sample, male and female subsamples using the Longitudinal Study of Young People in England 2004

		Sample		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Number of observations (*n.*)		2,406	2,411	1,250	1,069	1,156	1,342
Population size (*p.*)		2,818	1,879	1,457	823	1,361	1,056
Respective rates of HE participation (%)		60.00	40.00	63.90	36.10	56.31	43.69
Gender (Ages 13 to 18)	Male (%)	51.70*	43.81*	-	-	-	-
Household income - £ per annum (Ages 13 to 16)	Mean (£ pa)	25,977*	35,930*	26,921*	36,668*	24,967*	35,354*
	10th percentile (£ pa)	6,760	6,760	6,760	7,800	6,760	6,760
	25th percentile (£ pa)	13,000	15,080	13,000	15,080	11,960	15,080
	50th percentile (£ pa)	22,100	27,300	24,700	29,900	20,280	27,300
	75th percentile (£ pa)	35,100	41,948	35,100	Restricted	32,500	40,500
	90th percentile (£ pa)	46,908	67,500	Restricted	72,500	46,087	67,500
Family's National Statistics Socioeconomic Classification Class (Ages 13 to 16)	Managerial & professional (%)	31.22*	57.80*	30.18*	57.91*	32.34*	57.71*
	Intermediate (%)	7.89	8.07	8.18	8.22	7.58	7.95
	Small employers & own account workers (%)	13.62*	11.21*	14.03	12.13	13.18*	10.49*
	Lower supervisory & technical occupations (%)	14.95*	8.34*	15.78*	7.29*	14.07*	9.15*
	Semi-routine (%)	13.99*	7.57*	14.47*	8.03*	13.47*	7.22*
	Routine (%)	15.67*	5.36*	14.98*	5.26*	16.41*	5.43*
	Unemployed (%)	2.66*	1.66*	2.38*	1.16*	2.94	2.04
Family's highest educational qualification (Ages 13 to 16)	HE Degree or above (%)	9.25*	34.40*	9.25*	37.85*	9.26*	31.71*
	Lesser HE (%)	15.69*	21.39*	15.70*	20.40*	15.67*	22.16*
	A-Level (%)	21.54*	17.31*	22.23*	16.34*	20.79	18.07
	GCSE (5 A*-C) (%)	33.02*	18.89*	32.75*	17.31*	33.31*	20.11*
	Other (%)	1.86*	0.63*	1.74*	0.68*	1.99*	0.59*
	Level 1 (%)	7.77*	2.33*	7.66*	2.38*	7.88*	2.30*
	None (%)	10.87*	5.05*	10.66*	5.03*	11.11*	5.07*

** Indicates significance at the 5% level when conducting a mean-comparison Adjusted Wald Test.*

Table 12 (Continued)

		Sample		**Male Subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Single parent household (Age 13 to 14)	Yes (%)	25.05*	14.74*	22.01*	13.25*	28.3*	15.9*
Ethnic grouping (Age 13 to 14)	White-British (%)	91.16*	81.67*	90.67*	82.16*	91.68*	81.29*
	Indian subcontinent (%)	1.96*	7.11*	2.27*	7.31*	1.62*	6.96*
	Black-Caribbean (%)	1.52	1.37	1.17	0.98	1.90	1.68
	Black-African (%)	0.66*	2.57*	0.65*	2.77*	0.67*	2.41*
	Mixed (%)	2.70	2.75	3.09	2.77	2.29	2.73
	Other (%)	2.00*	4.52*	2.14*	4.00*	1.85*	4.93*

** Indicates significance at the 5ppts level when conducting a mean-comparison Adjusted Wald Test.*

Table notes: Mean comparison significance adjusted Wald tests were conducted on a participant's gender, mean household income, family's highest NS-SEC, family's highest educational qualification, single parent household, IMD and ethnic grouping excluding specific missing cases. Table 12 omits quarter of birth, specific missing cases for family's NS-SEC, government office region and whether the young person has a disability that affects schooling or otherwise. Appendix 8.15 provides a complete table of un-weighted/weighted descriptive statistics for our estimation sample and gender subsamples. Moreover, those statistics containing less than 10 unweighted individual-level observations were either replaced with 'Restricted', *categories omitted or merged where this was not suitable. Categories omitted included specific missing cases for family's NS-SEC and those omitted included a specific missing case for single parent household. In these instances the remaining case sum 100%. The remaining categories, therefore, are inflated to reflect this.*

From Table 12 we can observe that our sample places HE participation at 40.00%. Recall that our sample estimates mirror official estimates using the data, which also places HE participation by age 20 using the LSYPE at 40% (DfE, 2011, p.14). However, we do observe a significant difference with respect to the gender composition between the two groups. As our sample suggests a HE participation rate of 36.10% for young men and 43.69% for young women. Recall here that the number of women participating in HE has overtaken the number of men from the mid-1990s onwards. Table 12 also indicates that, on average, household income is significantly higher (by approximately 38%) for HE participants as opposed to non-participants. It also indicates that, HE participants are significantly more likely to come from a family whose highest socioeconomic class is categorised as managerial & professional. We also see that HE participants are significantly more likely to have a parent who has experienced HE (272% increase). Indeed we do expect this, given that significant WP policy effort that has been made in recent years to target first generation entrants.

We also observe from Table 12 significant differences between the groups with respect to household composition, for instance non-participants in HE are significantly more likely to originate from a single parent household (70% increase). It would also appear from our sample that young people with a white-British ethnicity are proportionally under-represented in HE. As we see from Table 12 that the proportion of young people of white-British ethnic origin is significantly smaller (10% decrease) for the HE participant group. On the other hand, those young people with 'Indian subcontinent', 'black-African' or 'other' ethnic background appear over-represented. The smallest difference is more than a 2-fold increase in the proportion of non-participants versus participants in HE for the 'Other' group. Nevertheless, we do not detect any significant differences for black-Caribbean and mixed ethnic backgrounds. Lastly, although we do not discuss the resulting impact after applying the sample weight - given official usage guidance; we do elaborate on this in the appendix (see Appendix 8.16).

4.4.2 Discussion

We begin this section by assessing goodness-of-fit, in order to select our preferred specification, and general robustness checks. Our discussion begins by comparing and contrasting differences with respect to individual and family background characteristics. We then proceed to discuss our findings with respect to Cultural Capital, Habitus and contextual Social Capital. We conclude this section with a summary of the main findings.

4.4.2.1 Assessing goodness-of-fit

A test of absolute fit indicated that our models are appropriately specified. In order to test relative fit, we again compute the AIC and BIC, for each model by sample[189]. Comparing the resulting scores, we see that model 4 – which includes our principal component vectors of Habitus and contextual Social Capital - is preferred in each instance. This finding suggests that the addition of Habitus and two contextual sources of Social Capital, at home and at school, improves the performance of our models by explaining more of the variance in HE participation. We refer the reader to Appendix 8.17 for full details.

Given that the LSYPE has a two-stage stratified sampling design where: (i) schools were selected and (ii) children within selected schools were then sampled. Our model does not specifically account for this stratified approach. Thus in order to run a robustness check, we estimate a multi-level (mixed effects) logistic model (see Appendix 8.19). The model includes a separate intercept for school attended (random intercept model), enabling the researcher to distinguish the between- and within-school variance. Although the techniques are conceptually distinct, the results from the multi-level model correspond closely.

Now we present our regression output generated from a weighted logistic model using the full LSYPE sample. A full copy of the regression output can be found in the appendix (see Appendix 8.17).

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[189] Note that the likelihood ratio test is invalid in the presence of sample weights.

4.4.2.2 Results

Table 13: Weighted logistic regression output estimating the influences on the probability of participation in Higher Education using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations				
	(1) YP_i, BG_i, KS_i	**(2)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (PCA)	**(3)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (Variables)	**(4)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (PCA)	**(5)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (Variables)
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Number of observations (*n.*)	4,817	4,817	4,817	4,817	4,817
Population size (*p.*)	4,697	4,697	4,697	4,697	4,697
Pseudo R^2	0.2885	0.3015	0.3114	0.3480	0.3685
CONTROL VARIABLES					
Gender - Dummy variable (Base case: Female)					
Male	-0.373*** *(0.082)*	-0.293*** *(0.083)*	-0.338*** *(0.091)*	-0.189** *(0.087)*	-0.205** *(0.099)*
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)					
Dec'89 to Aug'90	0.385*** *(0.091)*	0.348*** *(0.092)*	0.348*** *(0.093)*	0.339*** *(0.095)*	0.374*** *(0.095)*
Single parent household - Dummy variables (Base case: No)					
Yes	-0.197* *(0.112)*	-0.155 *(0.114)*	-0.153 *(0.114)*	-0.053 *(0.116)*	-0.090 *(0.119)*
Household income - Work, benefits and anything else for main and second parent					
£s per annum	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine)					
Managerial & professional	0.628*** *(0.160)*	0.570*** *(0.162)*	0.564*** *(0.165)*	0.475*** *(0.167)*	0.455*** *(0.173)*
Intermediate	0.616*** *(0.192)*	0.574*** *(0.195)*	0.554*** *(0.198)*	0.465** *(0.203)*	0.441** *(0.208)*
Small employers & own account workers	0.411** *(0.175)*	0.384** *(0.177)*	0.336* *(0.181)*	0.298 *(0.184)*	0.228 *(0.191)*
Lower supervisory & technical occupations	0.200 *(0.179)*	0.171 *(0.182)*	0.182 *(0.187)*	0.098 *(0.188)*	0.055 *(0.195)*
Semi-routine	0.375** *(0.181)*	0.340* *(0.184)*	0.342* *(0.187)*	0.233 *(0.191)*	0.242 *(0.196)*
Unemployed	0.313 *(0.290)*	0.313 *(0.288)*	0.305 *(0.294)*	0.184 *(0.303)*	0.189 *(0.317)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)					
HE undergraduate degree or higher	0.990*** *(0.130)*	0.935*** *(0.131)*	0.911*** *(0.131)*	0.861*** *(0.135)*	0.818*** *(0.139)*
Lesser HE	0.404*** *(0.119)*	0.397*** *(0.120)*	0.363*** *(0.120)*	0.386*** *(0.125)*	0.329*** *(0.127)*
A-Level	0.083 *(0.113)*	0.085 *(0.115)*	0.072 *(0.117)*	0.098 *(0.119)*	0.074 *(0.123)*
Other	-0.470 *(0.345)*	-0.479 *(0.316)*	-0.474 *(0.302)*	-0.448 *(0.298)*	-0.483 *(0.306)*
Level 1	-0.322 *(0.198)*	-0.251 *(0.199)*	-0.244 *(0.201)*	-0.295 *(0.207)*	-0.333 *(0.210)*
None	0.002 *(0.168)*	-0.011 *(0.170)*	0.000 *(0.172)*	-0.030 *(0.182)*	-0.070 *(0.184)*

Table 13 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Index of Multiple Deprivation 4 Quantiles (Base case: High)					
High-medium	0.244**	0.207*	0.177	0.227*	0.193
	(0.118)	*(0.120)*	*(0.121)*	*(0.122)*	*(0.125)*
Low-medium	0.376***	0.355***	0.333***	0.407***	0.369***
	(0.126)	*(0.127)*	*(0.129)*	*(0.131)*	*(0.135)*
Low	0.583***	0.562***	0.534***	0.619***	0.593***
	(0.128)	*(0.130)*	*(0.131)*	*(0.134)*	*(0.138)*
Key Skills					
Technical Skill (1st order)	0.911***	0.866***	0.880***	0.641***	0.681***
	(0.055)	*(0.055)*	*(0.056)*	*(0.061)*	*(0.064)*
Technical Skill (2nd order)	0.115***	0.100**	0.098**	0.052	0.063
	(0.041)	*(0.041)*	*(0.042)*	*(0.043)*	*(0.044)*
Gifted & Talented	0.123**	0.099**	0.097**	0.078	0.068
	(0.048)	*(0.049)*	*(0.049)*	*(0.051)*	*(0.050)*
Literacy Skill	0.356***	0.348***	0.333***	0.241***	0.198***
	(0.047)	*(0.048)*	*(0.048)*	*(0.050)*	*(0.053)*
Ethnic group - Dummy variables (Base case: White-British)					
Indian subcontinent	2.320***	2.159***	2.147***	1.825***	1.866***
	(0.171)	*(0.173)*	*(0.177)*	*(0.175)*	*(0.183)*
Black-Caribbean	0.682**	0.581**	0.605**	0.416	0.472*
	(0.270)	*(0.283)*	*(0.274)*	*(0.284)*	*(0.278)*
Black-African	2.145***	2.074***	2.039***	1.794***	1.792***
	(0.410)	*(0.425)*	*(0.427)*	*(0.420)*	*(0.405)*
Mixed	0.263	0.275	0.283	0.207	0.239
	(0.224)	*(0.221)*	*(0.223)*	*(0.210)*	*(0.212)*
Other	1.311***	1.238***	1.237***	1.031***	1.018***
	(0.262)	*(0.265)*	*(0.265)*	*(0.274)*	*(0.280)*
First language - Dummy variables (Base case: English)					
Bilingual	0.715*	0.652*	0.574	0.485	0.550*
	(0.379)	*(0.361)*	*(0.363)*	*(0.340)*	*(0.323)*
Other	0.597*	0.503	0.482	0.350	0.439
	(0.317)	*(0.307)*	*(0.313)*	*(0.323)*	*(0.341)*
Older siblings					
n.	-0.126***	-0.100**	-0.106**	-0.078*	-0.071
	(0.043)	*(0.043)*	*(0.043)*	*(0.045)*	*(0.046)*
Younger siblings					
n.	-0.083**	-0.073*	-0.064	-0.078*	-0.075*
	(0.042)	*(0.042)*	*(0.043)*	*(0.044)*	*(0.045)*

Table 13 (Continued)

	Empirical Estimations				
	(1)	(2)	(3)	(4)	(5)
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS					
Cultural Capital					
Cultural Capital	-	0.221***	-	0.133***	-
	-	*(0.042)*	-	*(0.045)*	-
Habitus					
Academic Self-Perception	-	-	-	0.179***	-
	-	-	-	*(0.048)*	-
Aspirations for Further Study	-	-	-	0.535***	-
	-	-	-	*(0.064)*	-
Social Capital – young person networks					
Outgoing	-	-0.283***	-	-0.168***	-
	-	*(0.040)*	-	*(0.042)*	-
Social Participation	-	-0.028	-	-0.023	-
	-	*(0.038)*	-	*(0.040)*	-
Social Capital at home					
Parent-Young Person Connectivity	-	-	-	-0.032	-
	-	-	-	*(0.042)*	-
Parental Aspirations for Young Person	-	-	-	0.307***	-
	-	-	-	*(0.049)*	-
Parent-Young Person Concurrence	-	-	-	0.064*	-
	-	-	-	*(0.039)*	-
Social Capital at school					
Parent-School Connectivity	-	-	-	-0.188***	-
	-	-	-	*(0.042)*	-
Parental Assessment of Schooling	-	-	-	0.186***	-
	-	-	-	*(0.042)*	-
Parental Participation in School Activities	-	-	-	0.016	-
	-	-	-	*(0.046)*	-
Parental Involvement in School Governance	-	-	-	-0.004	-
	-	-	-	*(0.042)*	-

[* p-value < 0.10, ** p-value < 0.05 and *** p-value < 0.01]

Table notes: Although omitted from the output, we also control for: domicile region, declared disability (affects schooling or otherwise), extra-tuition received in school subjects and, separately, supplementary subjects. We omit specific missing categories for family's highest NS-SEC and our single parent household indicator for all models. In addition to the specific variables used to construct our Cultural Capital, Habitus and contextual Social Capital variables as individual variables in applicable models (3) and (5). Complete output tables can be found in Appendix 8.17. Moreover, Appendix 8.18 contains a table of marginal effect changes at representative values for our preferred model.

Note that the results in Table 13 cannot be viewed as causal. As we do not meet the conditions to establish causality, namely: temporal precedence, covariance of the cause & effect and that no possible alternative explanations exist. We believe that our work satisfies the temporal precedence condition (cause precedes effect) and partially the covariance of cause & effect (internal validity) criterion. However, we do not specifically account for all possible sources of influence in our framework. Aspects like non-cognitive ability, personality and parenting might be positively biasing or driving some of our reported associations. Therefore, we recommended the reader interpret our main results as associations rather than 'effects'. Note that as our specification follows the same basic principal as our first and second empirical chapters, we refer the reader to the fuller discussion in 3.4.2.2.

Table 13 presents coefficients (as opposed to odds ratios) from a logistic model, as such we compute the predicted probability of HE participation in order to contextualise the results. These were calculated based on the results for our preferred model using a reference case. The specific values we use for our reference case were chosen after careful consideration of the weighted descriptive statistics to reflect majority characteristics of the underlying population. Specifically our reference case assumes that the young person was born between December 1989 to August 1990, belongs to a two-parent household, has an annual household income of £24,700, family's NS-SEC can be categorised as lower supervisory & technical occupations, family highest academic achievement 5 A*-C grade GCSEs, resides in the Midlands, their ethnic grouping is white-British, the young person has no declared disability (which impedes on schooling or otherwise), speaks English as a first language, not in receipt of additional tuition (school or supplementary subjects), has no older siblings but has one younger sibling, Key Skills, Cultural Capital, Habitus and Social Capital principal components are fixed at the 50th percentile mean. As such the predicted probability of HE participation using our preferred model is 25.27% (95% CI: ±6.96ppts) and 29.01% (95% CI: ±7.59ppts) for young men and women respectively. We argue that these adjusted predictions are more meaningful than simply using the mean values.

4.4.2.3 Individual characteristics

Controlling for income, ability and family background, our results suggest that being male is negatively associated with HE participation. This finding is fairly consistent across the five models although the size and significance of the coefficient declines when we incorporate our measures of Cultural Capital, Habitus and Social Capital measures. Using our reference case, our model implies that young men are less likely to participate in HE by 3.74ppts (13%) compared with young women ceteris paribus. This represents quite a marked change over time. For instance, in our first empirical chapter we found that in the early 1980s young women were less likely to participate using a sample derived from the NCDS. In the BCS70 however we found no statistically significant association between HE participation rates by gender. Nevertheless national statistics support our findings. For instance, HEIPR statistics for the 2009/10 academic year reveal that females are more likely to participate by 7ppts than males who have a HE participation rate of 33.8% (BIS, 2017b). Moreover, this has been the case since the mid-1990s.

Our results also indicate that being born in the last three quarters of the academic year, namely December 1989 to August 1990 (as opposed to being born in the first quarter) has a positive association with the likelihood of future HE participation. Our model implies that this equates to a reduction in the likelihood of HE participation by 5.86ppts (23%) for young men and 6.46ppts (22%) for young women, ceteris paribus. Moreover, the results obtained using our gender subsamples appear to suggest that the association may be stronger and more significant (p-value < 0.01 as opposed to < 0.05) for females. The inverse association between age and HE participation seems counter intuitive, given that students born late in the academic year typically perform significantly worse on average in KS1 to KS4 examinations (Crawford et al., 2010). However, given that we are able to control for cognitive ability, amongst a range of other contextual factors, we can reasonably justify this difference.

Our regressions also included a series of categorical dummies relating to ethnic grouping and first language. These controls were included to separate cultural and social factors associated with being part of an ethnic minority from the impact of language spoken. Our results indicate that compared to our base case (white-British), our ethnicity indicators for ‘Indian subcontinent’, ‘black-African’ and ‘other’ all share a positive and statistically significant association with future HE participation. Using our reference case, our model implies the likelihood of HE participation increases by 42.45ppts (168%) for ‘Indian subcontinent’, 41.76ppts (165%) for black-African and 23.39ppts (93%) for ‘Other’. Likewise, for young women our model suggests they are 42.71ppts (147%), 42.06ppts (145%) and 24.38ppts (84%) more likely respectively. However, the results do reveal differences by gender. Regardless, what is evident is that ethnic group has a comparatively stronger association with an individual’s probability of HE participation in comparison to other influences. This finding is not completely unexpected, given the insights offered by the Cultural Capital literature. In this literature researchers purposely limit the ethnic make-up of their sample to mitigate sizable associations and complex interactions between ethnic grouping and culture, e.g. Kaufman & Gabler (2004) and Dumais (2002). It is however interesting, that despite our expanded conceptualisation and the fact that we account for main language, we still observe such sizable impacts. We suspect this is likely driven by small sample sizes within-group as we omit the ethnic boost.

These findings suggest that the ethnic gap in HE participation observed in the raw data is not satisfactorily explained by individual and family background characteristics but also by cultural and social factors. We propose instead that the strong association evidenced by ethnic group may be partly to do with differences in parenting styles across different ethnicities. Indeed, there has been some debate in the US media (less so in the UK) surrounding the 'Tiger Mother' parenting style, given that Asian-American children are proportionally over-represented in the US HE (Poon et al., 2011). Essentially, this parenting style places a high value on accomplishments in childhood by filling a child's time with more structured academic and extracurricular pursuits, leaving little time for free play. Nevertheless some academics, notably Kohler et al. (2012), have raised concerns that this style of parenting may have adverse welfare implications for the child.

4.4.2.4 Family background

Our results indicate that originating from a family whose NS-SEC class is characterised as managerial & professional or intermediate, also has a positive association with HE participation. Contextualising this we observe an increase in the probability of HE participation of young men and women from these class backgrounds. However, re-estimating the model using exclusively the male subsample, we observe that the category intermediate is no longer statistically significant. Whereas in the output generated from our female subsample, this category exhibits a stronger association, even more so than managerial & professional. We illustrate the predicted probabilities of HE participation and 95% confidence interval error bars for our reference case in Figure 18[190].

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[190] Please note that the resolution for Figure 18 and 19, in this empirical chapter, may appear a little low. We apologise for this but it could not be avoided due to disclosure controls. This occurs because it is a fixed policy of the UK Data Service not to release figures as chart objects. Instead figures must be saved as a picture which inevitably involves a loss of resolution after conversion.

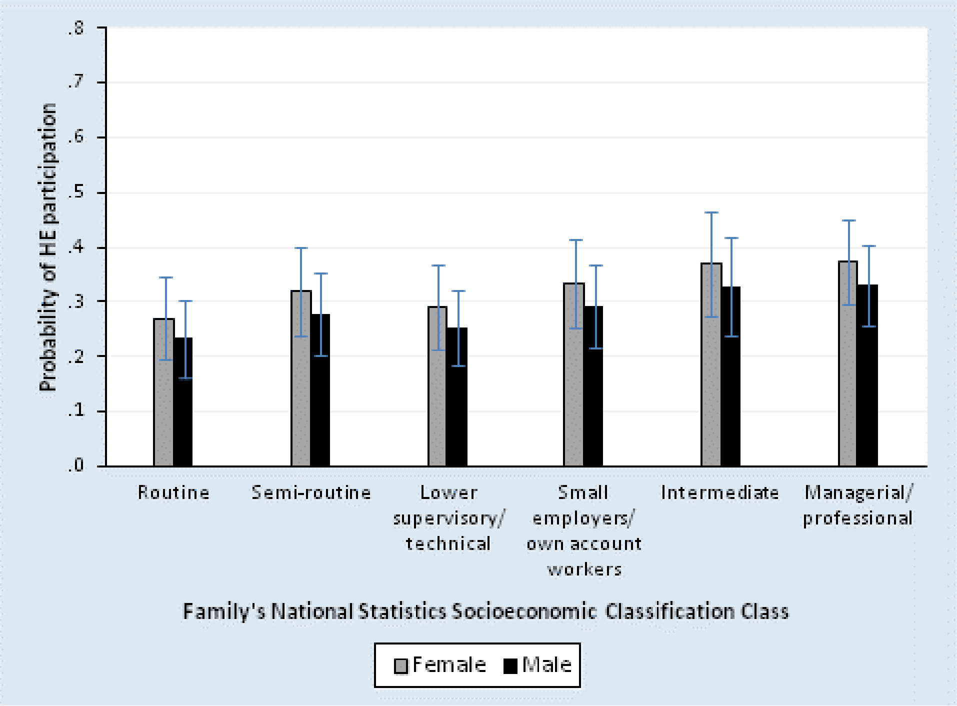


Figure 18: Predicted probability of participation in Higher Education: the role of Family's National Statistics Socioeconomic Classification Class using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Having controlled for socioeconomic status, our results also show that the implied impact of income is relatively small whilst also being statistically insignificant. For instance, increasing household income to double the median only results in an increase in the likelihood of HE participation by approximately 1.6ppts (6%) and 1.5ppts (5%) for young men and women. At first glance, the insignificance of household income appears to contrast with that of Anders (2012a) who uses the same dataset. However, Anders only reports a significant income association with respect to his findings relating to whether or not an individual applies to university or not (selection effect). Moreover, when he estimates a model more broadly similar to ours, e.g. attending university conditional on applying, household income is not strongly significant. Lastly, Anders specification also omits IMD and familial social status, which we would expect to be correlated with household income. Therefore, we believe one of the reasons that income is not statistically significant in our models is that these other variables account for some of the reported impact. Furthermore, once we drop IMD and social status we find similar results to Anders (2012a). We do not report the results here but these are available upon request from the author.

As expected our results relating to family's highest educational attainment reveal consistently that having a parent educated to degree level or above is positively associated with a young person's likelihood of participating in HE (intergenerational educational transmission). We also observe a similar positive relationship with respect to those who have lesser HE (below undergraduate degree) for our sample and male subsample, but only observe weak statistical significance (p-value < 0.1) when we estimate our model using our female subsample. As before, we illustrate the predicted probabilities of HE participation and 95% confidence interval error bars for our reference case in Figure 19.

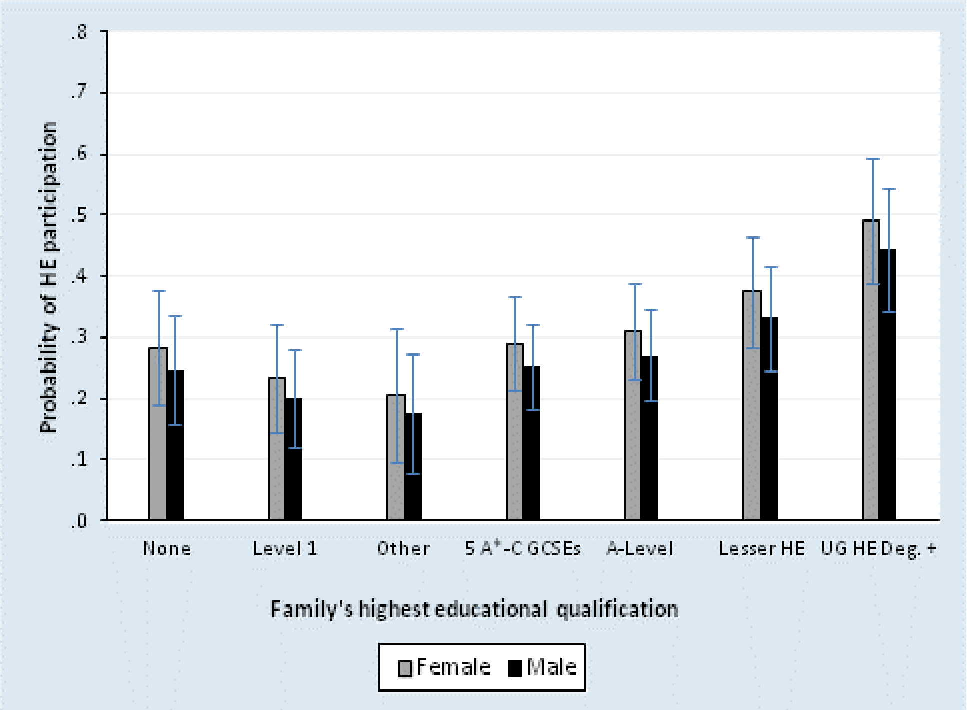


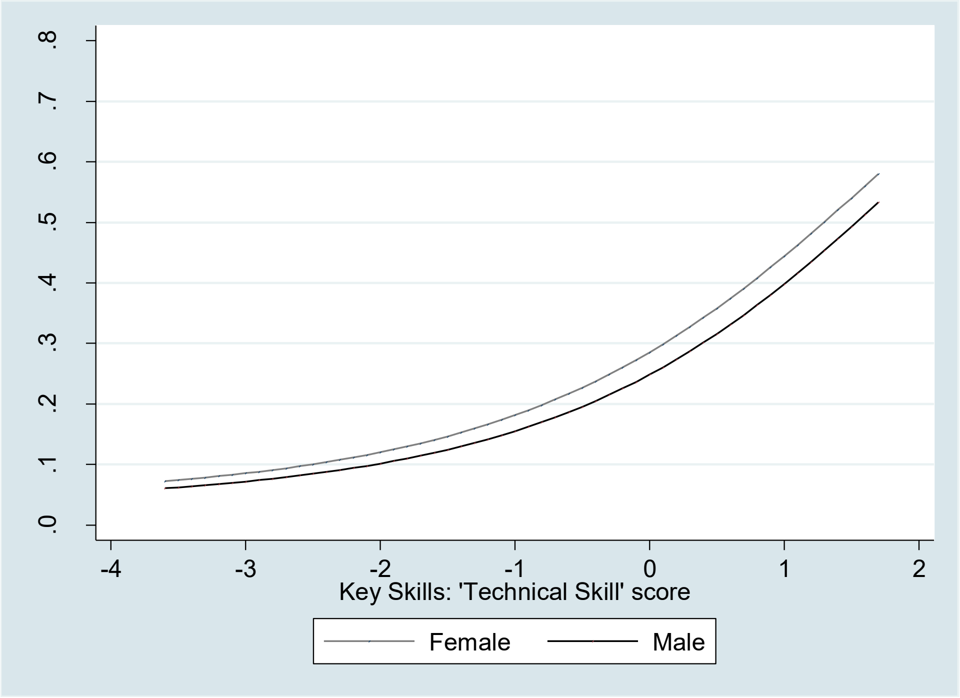
Figure 19: Predicted probability of participation in Higher Education: the role of Family's highest educational qualification using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Our results also reveal that being from a single parent household does not exhibit a significant association with HE participation for our preferred model. However, our results show that, without the inclusion of our measures of Cultural Capital, Habitus and contextual sources of Social Capital, the incidence of being from a single parent family exhibits a negative but weak statistically significant association with HE participation. We argue that, in the absence of Habitus, the incidence of being from a single parent family might act as a proxy for lower educational aspirations (potentially both parent and child). This is consistent with Garg et al. (2007), who report that adolescents from single parent families score significantly lower with respect to educational aspirations.

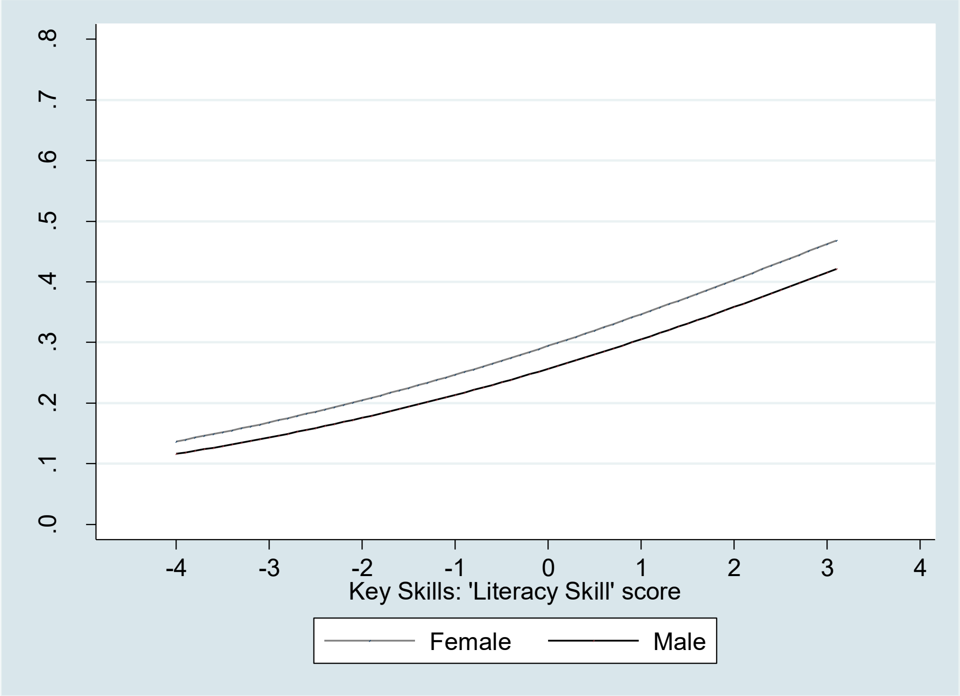
The results also suggest that those from larger families may be less likely to participate in HE. Interestingly the negative association between older sibling(s) and HE participation appears to be largely driven by females, as we do not observe a significant association using our male subsample.

4.4.2.5 Key Skill principal components - a proxy for cognitive ability

As expected our results indicate the importance of cognitive ability in determining future HE participation. Specifically, we find that our principal components 'Technical Skill' and 'Literacy Skill' exhibit consistently strong positive associations. However, we do not observe a statistically significant association with respect to our 'Gifted & Talented' component. For our estimation sample, male or female subsamples. Figure 20 illustrates the predicted probabilities of future HE participation using our LSYPE sample at over the range of 'Technical Skill' and 'Literacy Skill' principal components score distributions.



[Approx. 'Technical Skill' percentiles: (10th) -1.55 (25th) -0.74 (50th) 0.04 (75th) 0.71 (90th) 1.12]



[Approx. 'Literacy Skill' percentiles: (10th) -1.51 (25th) -0.77 (50th) -0.08 (75th) 0.58 (90th) 1.15]

Figure 20: Predicted probability of participation in Higher Education: the role of two Key Skill principal components 'Technical Skill' and 'Literacy Skill' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

From Figure 20 we observe a positive yet decreasing association with respect to 'Technical Skill'. Thus, those individuals with higher scores are even more likely to invest in HE. Figure 20 also shows a positive association, with respect to the component 'Literacy Skill', as we move through the percentiles. In order to illustrate the non-linear nature of ‘Technical Skill’ we plot the marginal effects over the range of scores for our reference case in Figure 21.

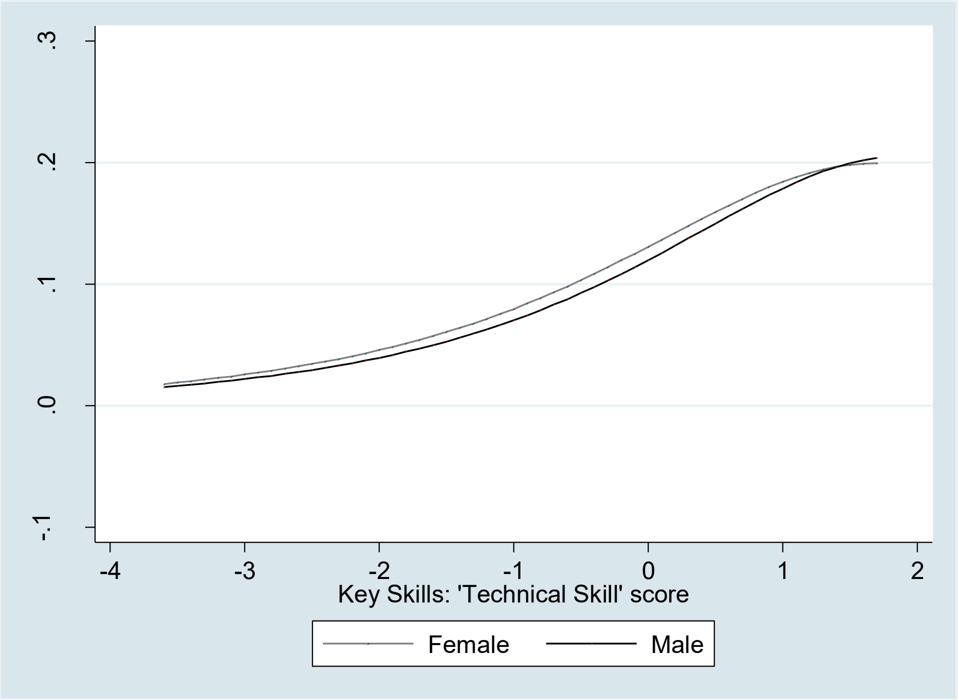
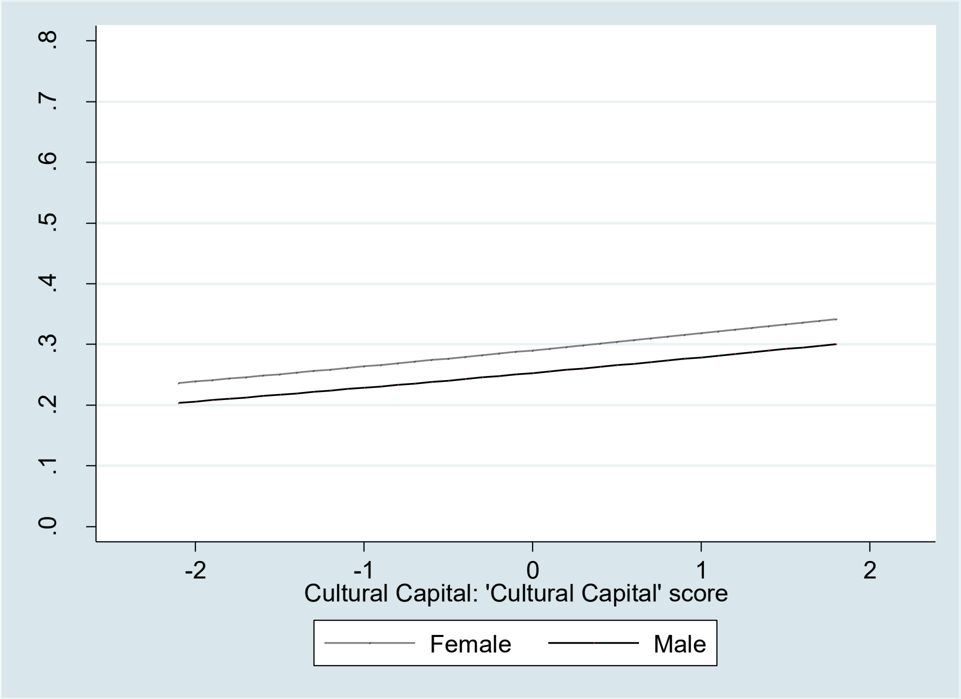


Figure 21: Marginal effect on the probability of participation in Higher Education over the distribution of a Key Skill principal component 'Technical Skill' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Figure 21 reveals that as we move left to right across the distribution of 'Technical Skill' the predicted probability of HE participation increases non-linearly. However once we hit the 75th percentile, the increase begins to level off before flattening out after surpassing the 90th percentile. We hypothesise that, past such high levels of ability, other factors, such as family background characteristics, personal preferences or other circumstances increase in relative importance.

4.4.2.6 Cultural Capital

Our results indicate that our measure of Cultural Capital has a positive and statistically significant association with HE participation. This is perhaps not surprising, given our findings in our first empirical chapter, although we might have expected a more attenuated relationship. Given that we only extract a singular principal component (as opposed to three) and omit indicators relating to engagement in media. Although, it is more specific with respect to cultural activities participated in. Nevertheless, when Habitus and our Social Capital at home and at school principal components are added, the size of the 'Cultural Capital' coefficient declines between models 2 and 4 but remains positive and statistically significant. This may be indicative of Habitus mediating (at least partially) the positive association between Cultural Capital and HE participation in model 2. To avoid any contamination caused through also including Social Capital at home and at school, we tested this hypothesis by estimating model 2 with and without our measure of Habitus and found the same result (results not presented). This result is partially consistent with Gaddis (2013) who found that the inclusion of measures of Habitus completely mediated Cultural Capital. Parents are likely to facilitate the majority of cultural participation and we cannot exclude the possibility that any significance might reflect differences in parental values, interests, style and degree of involvement (Lee & Bowen, 2006; Roska & Potter, 2011). We illustrate the estimated total effect on the probability of HE participation of Cultural Capital across the range of scores using our preferred model in Figure 22.

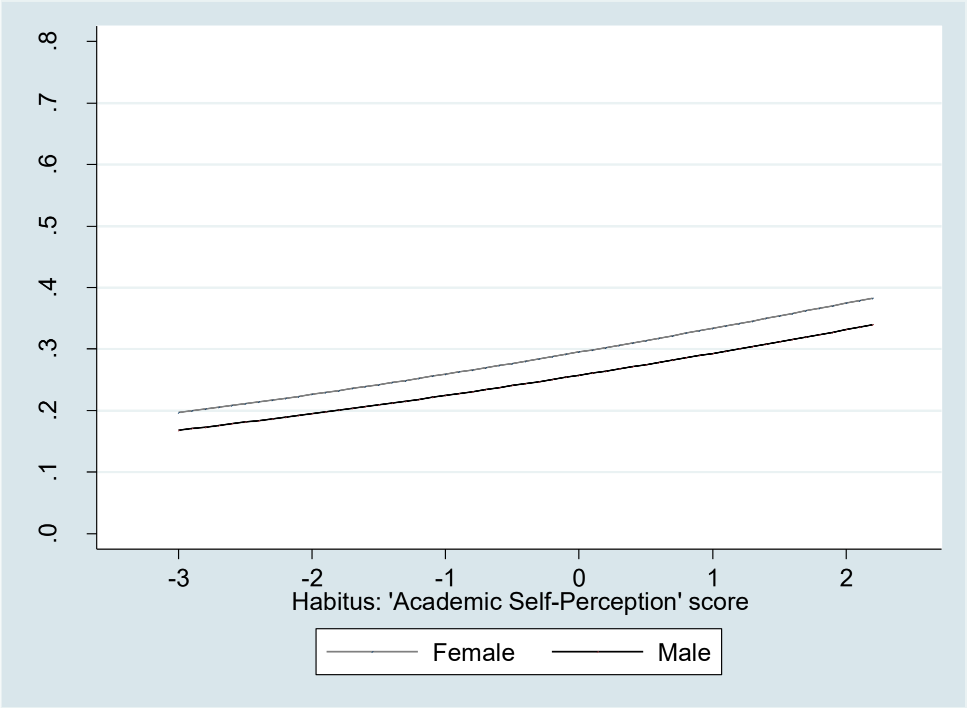


[Approx. 'Cultural Capital' percentiles: (10th) -1.47 (25th) -0.74 (50th) -0.00 (75th) 0.72 (90th) 1.45]

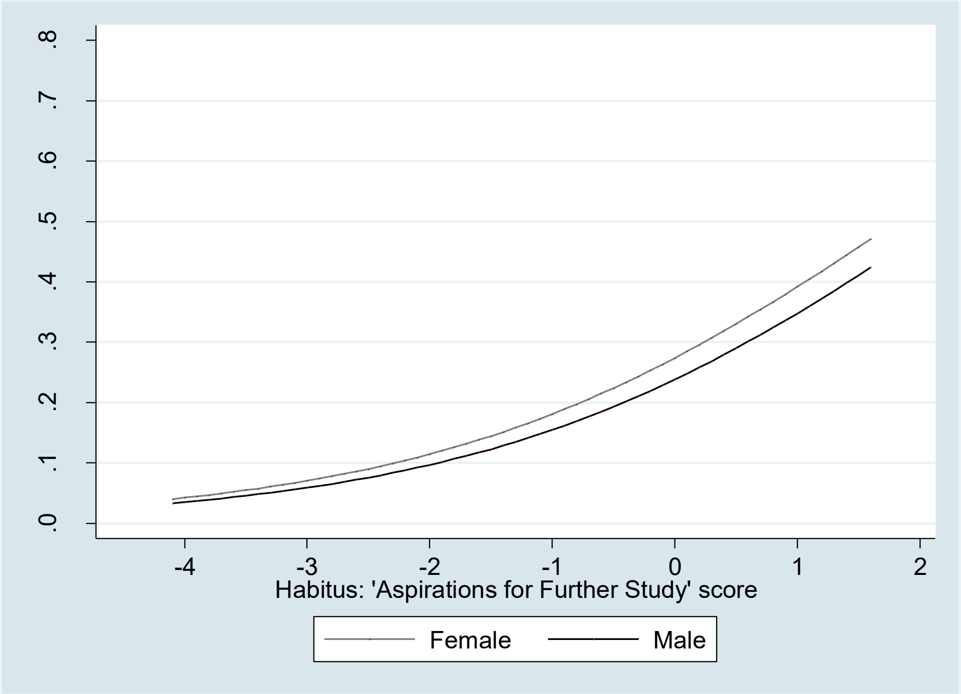
Figure 22: Predicted probability of participation in Higher Education: the role of a ‘Cultural Capital’ principal component using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

4.4.2.7 Habitus

Our estimations reveal that both principal components, namely ‘Academic Self-Perception’ and ‘Aspirations for Further Study’, have a positive and statistically significant association with a young person’s likelihood of future HE participation. Intuitively it would seem that both dimensions, given their relevance to HE participation, should exhibit significant associations. Given that Habitus (or embodied Cultural Capital) can be defined as dispositions and tendencies that govern how individuals perceive and react to the world around them. One potential mechanism through which these associations may operate is through self-selection via individuals identifying with and perceiving university as a suitable option for them in the future. It may also be the case that high degree of belief in one's own worth, in certain instances, may motivate an individual; leading to a virtuous cycle of self-perception, motivation and attainment. We illustrate the estimated total effect across the range of scores for both of these components in Figure 23.



[Approx. 'Academic Self-Perception' percentiles:
(10th) -1.41 (25th) -0.88 (50th) Restricted (75th) 0.14 (90th) 0.58]



[Approx. 'Aspirations for Further Study' percentiles:
(10th) -2.17 (25th) -0.41 (50th) -0.15 (75th) 0.49 (90th) 0.85]

Figure 23: Predicted probability of participation in Higher Education: the role of two Habitus principal components 'Academic Self-Perception' and 'Aspirations for Further Study' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

We see from Figure 23 that both of the Habitus principal components 'Academic Self-Perception' and 'Aspirations for Further Study' exhibit positive and strongly statistically significant associations with HE participation. What is also evident from Figure 23 is that the 'Aspirations for Further Study' exhibits an exponentially increasing association with the probability of HE participation. In order to better capture the features of this non-linear relationship we compute and illustrate the marginal effects over the range of scores in Figure 24.

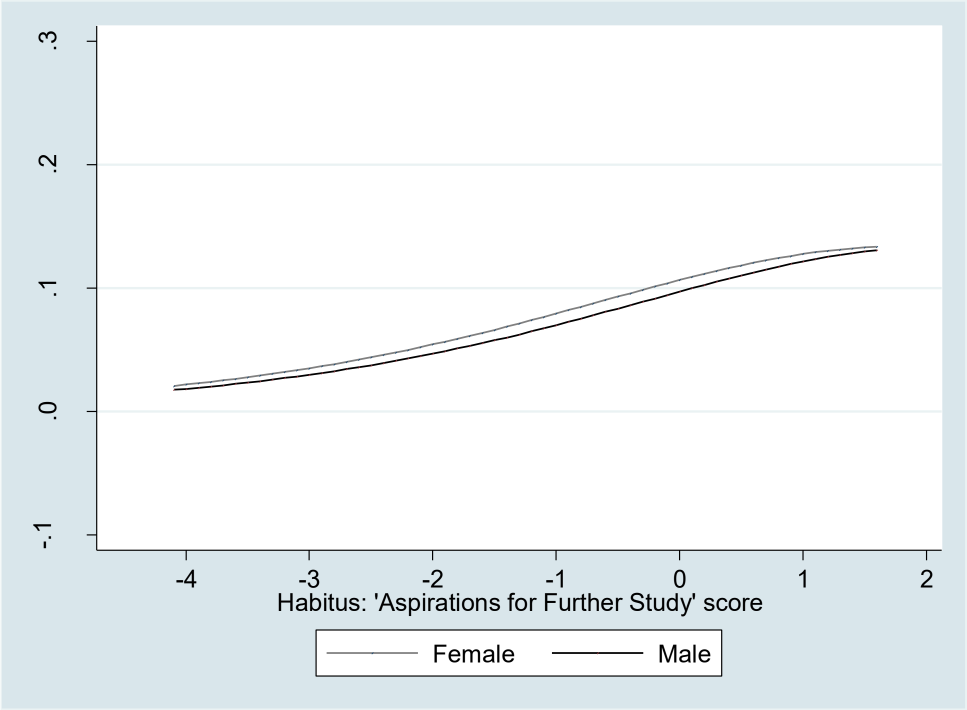


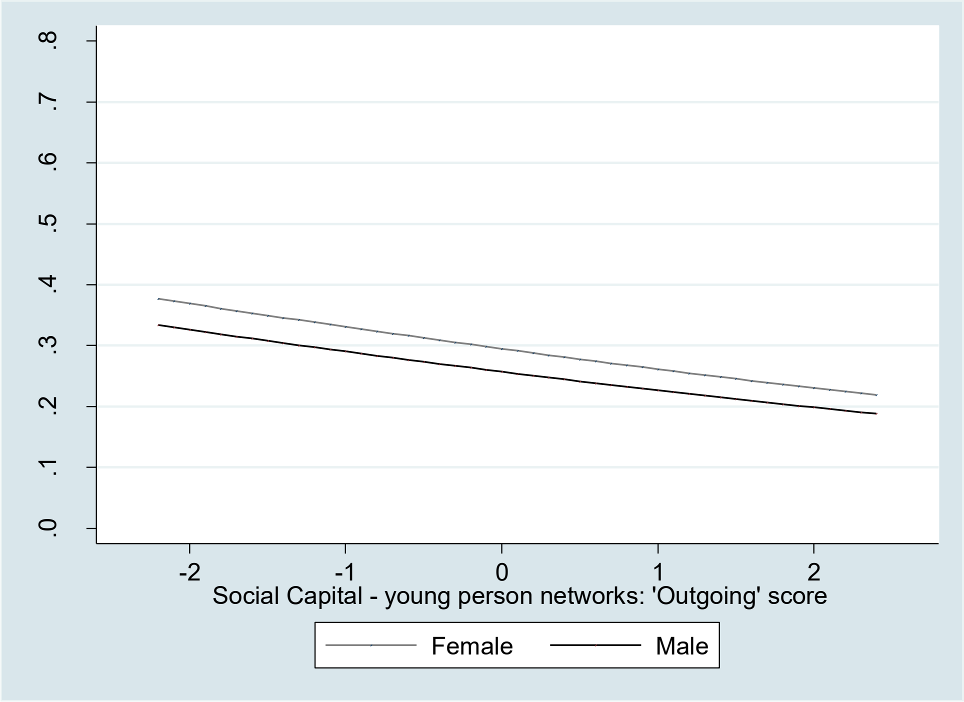
Figure 24: Marginal effect on the probability of participation in Higher Education over the distribution of a Habitus principal component 'Aspirations for Further Study' scores using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Figure 24 reveals that as we move left to right across the distribution of 'Aspirations for Further Study' the predicted probability of HE participation increases, at first fairly linearly, and then levels off (particularly for females) as we approach the 90th percentile. We hypothesise that if a young person has high hopes he or she may apply themselves more at school in order to realise their ambition.

4.4.2.8 Contextual Social Capital

Of the two components which make up our Social Capital - young person networks vector, only the component ‘Outgoing’ exhibits a (negative) statistically significant association with HE participation. We observe a weak positive statistically significant association for the component ‘Social Participation’ once we re-estimate model 2 using either our male or female subsample. However, this association becomes insignificant when we include additional vectors for Habitus, Social Capital at home and at school. Separately, we also observe a reduction in the magnitude of the coefficient for our component ‘Outgoing’ across all samples between models 2 and 4, although no change in significance.

The negative association observed with respect to the component 'Outgoing' for both males and females is consistent with our BCS70 results from our first empirical chapter. Here the component is strongly loaded with respect to cohort member activities: plays in the streets. On the other hand, the LSYPE component 'Outgoing' is loaded with respect to: ‘How many times gone out with friends in last 7 days’, ‘How many times young person had friends round to your house in last 7 days’ and ‘Whether been to or done in last 4 weeks: just hung around, messed about near to your home’. In our previous empirical chapter, we proposed that the observed association might reflect reduced academic focus or capture aspects of personality such as extraversion. However, given subtle differences in the indicators used between the chapters, this result might also reflect lower parental supervision. We illustrate the total effects across the range of scores for the component 'Outgoing' in Figure 25.

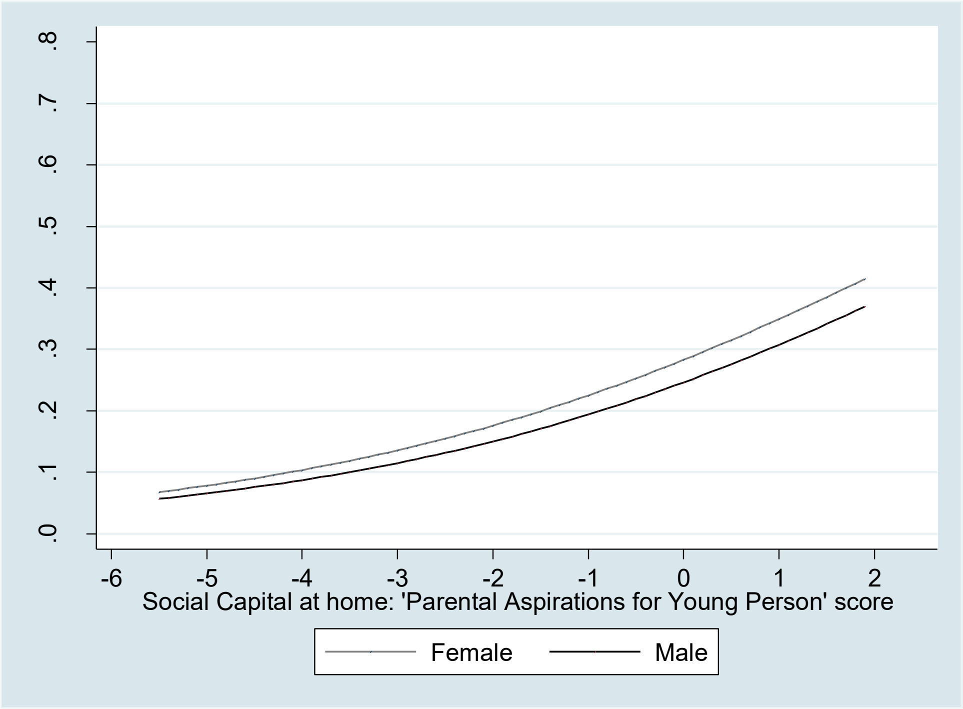


[Approx. 'Outgoing' percentiles: (10th) -1.29 (25th) -0.62 (50th) 0.14 (75th) 0.89 (90th) 1.53]

Figure 25: Predicted probability of participation in Higher Education: the role of a Social Capital – young person networks principal component 'Outgoing' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

We now turn to discuss the results in relation to our Social Capital at home principal components. Our results show that the component 'Parent-Young Person Connectivity' is not statistically associated with future HE participation across all samples. On the other hand, the component 'Parental Aspirations for Young Person' reveals a consistent positive and strongly significant association. We also observe a positive albeit weaker association with respect to our component 'Parent-Young Person Concurrence'. This association strengthens (0.01 < p-value < 0.05) when we re-estimate the model using the female subsample and becomes insignificant when the model is re-estimated using only males.

Given that the component 'Parental Aspirations for young person is loaded with respect to: what parents would like the young person to do when reach school leaving age, how often parents know where they are when out in the evening and how many times eaten a family meal together in last seven days. It follows that parents who have high aspirations for their child may take a keener interest in their child's development, provide additional incentives for doing well at school, help provide or take other actions to encourage academic achievement. Bianchi & Robinson (1997) present some indirect evidence for this by showing that parents who work and highly educated are, on average, more restrictive with respect to their child's time spent watching television. Differences in parenting style could also provide an additional/alternative explanation. This is plausible, given the finding in the literature that authoritative parenting by European American parents is associated with superior academic outcomes (Park & Bauer, 2002). We illustrate the implied total effects over the range of scores for the component 'Parental Aspirations for Young Person' in Figure 26.



[Approx. 'Parental Aspirations for Young person' percentiles:
(10th) -1.73 (25th) -0.72 (50th) 0.11 (75th) 0.68 (90th) 0.94]

Figure 26: Predicted probability of participation in Higher Education: the role of Social Capital at home principal component 'Parental Aspirations for Young Person' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Given the bowed appearance of the prediction lines, from left-to-right across the distribution of 'Parental Aspirations for Young Person' scores, we compute and illustrate the marginal effects over the range of scores in Figure 27.

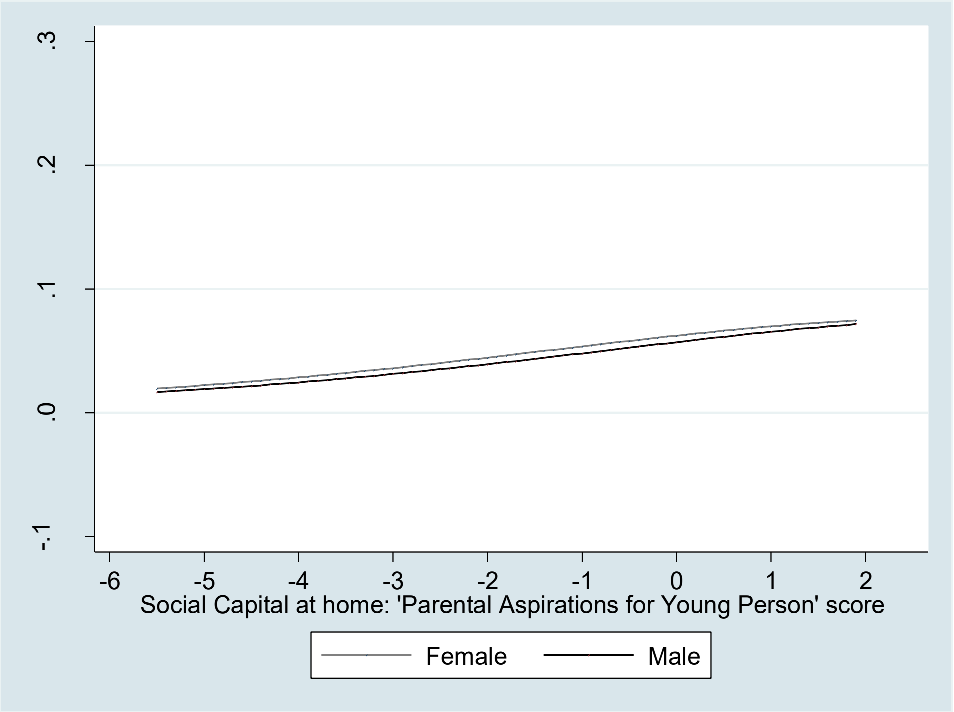


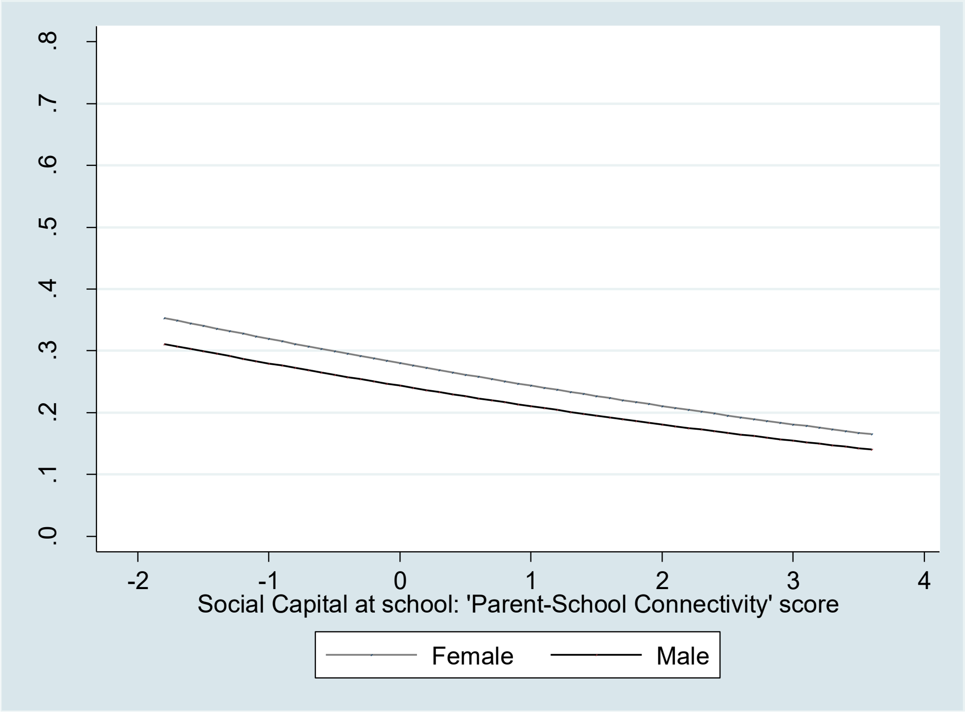
Figure 27: Marginal effect on the probability of participation in Higher Education over the distribution of a Social Capital at home principal component ‘Parental Aspirations for Young Person' scores using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Figure 27 reveals that as we move left to right across the distribution of 'Parental Aspirations for Young Person' the predicted probability of HE participation is fairly linear. One might explain the positive association is a causal relationship linking their aspirations for the young person to the amount of resources (household income, time, etc.) they (the parent) devotes to their child. Separately, as we pointed out earlier the component 'Parent-Young Person Concurrence' only appeared to exhibit a reasonable (p-value < 0.05) statistically significant association with HE participation for the female subsample. The significance of this component implies that the personal relationship between young women and their parents is particularly important with respect to academic success.

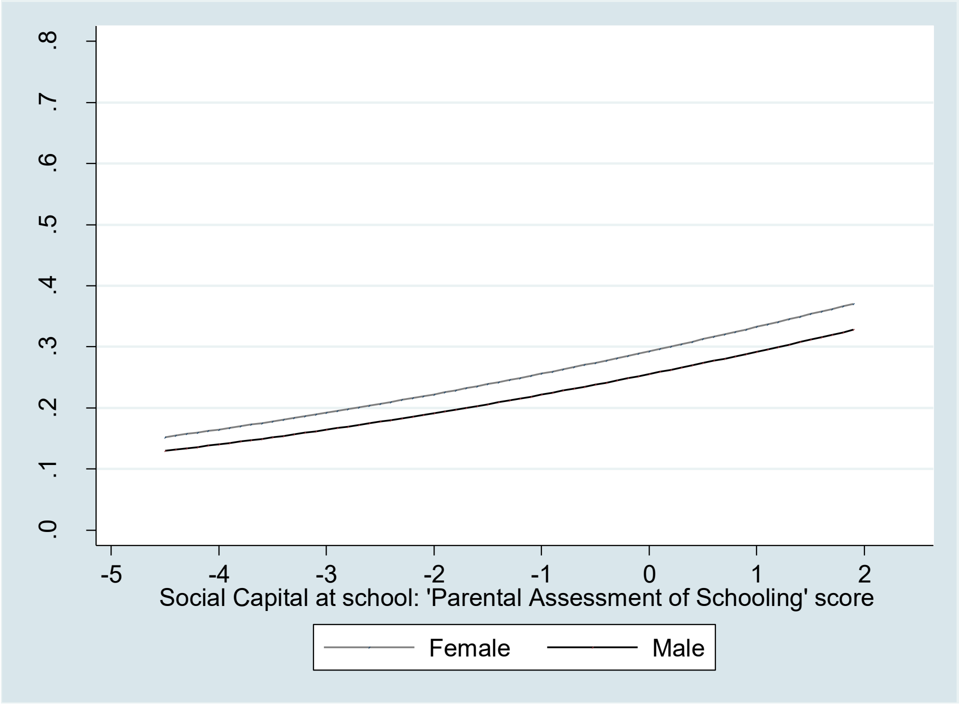
In contrast to Social Capital at home, our Social Capital at school components, exhibit fairly consistent associations across samples. We observe a negative and strong statistically significant association with respect to our component ‘Parent-School Connectivity’ and a strong positive statistical significant association for our component

‘Parental Assessment of Schooling’. No statistically significant association is observed with respect to either the components ‘Parental Participation in School Activities’ and ‘Parental Involvement in School Governance’.

The negative association exhibited by the component ‘Parent-School Connectivity’ may initially appear counter intuitive. However, it becomes less so once we consider that the two variables that load most highly onto the component relate to ‘how often the main parent speaks to the young person's teachers about schooling’ and ‘whether the main parent has had any specially arranged meetings with teachers about the young person's schooling’. We believe it is likely that the majority of these communications relate to behavioural issues which may be indicative of a troubled school, home or personal life making future HE participation less likely. Nevertheless, it might also reflect low levels of parental academic involvement, as Hill et al. (2004) suggests that higher parental academic involvement lowers the incidence of problematic behaviours. On the other hand, the positive association evidenced by the ‘Parental Assessment of Schooling’ may reflect teacher responsiveness to individual learner needs, which may be indicative of better resourced and/or managed schools in the absence of controls. We illustrate the predicted probabilities for the Social Capital at school principal components 'Parent-School Connectivity' and 'Parental Assessment of Schooling' over the range of scores in Figure 28.



[Approx. 'Parent-School Connectivity' percentiles:
(10th) -1.15 (25th) -0.81 (50th) -0.26 (75th) 0.77 (90th) Restricted]



[Approx. 'Parental Assessment of Schooling ' percentiles:
(10th) -1.48 (25th) -0.84 (50th) -0.07 (75th) 0.61 (90th) Restricted]

Figure 28: Predicted probability of participation in Higher Education: the role of two Social Capital at school principal components 'Parent-School Connectivity' and 'Parental Assessment of Schooling' using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Before we move on to summarise our findings, our study has made clear contributions to understanding the influences affecting HE participation. From the results in Table 13 we show how estimated individual and family background associations change as our model is extended to include measures of Cultural Capital, Habitus and contextual Social Capital. For example, as the coefficient for male falls from -0.373 in model 1 without our measures of Cultural Capital, Habitus and contextual sources of Social Capital to -0.189 with them. Similarly, the estimated coefficients for social class have also declined. For instance, the coefficient for managerial & professional for example falls from 0.628 to 0.475 whilst small employers & own account workers and semi-routine no longer exhibits a statistically significant association (p-value falls from < 0.05 to > 0.10). We also see a similar picture for parental education, cognitive ability, ethnicity, older and younger siblings. Yet interestingly, we also observe no real change (if anything a slight increase) with respect to IMD. This would seem to imply that individual and family background are partially proxying for the absence of Cultural Capital and Social Capital. Our results also suggest that the associations exhibited by our 'Cultural Capital' and Social Capital – young person networks 'Outgoing' component appear to be reduced by the inclusion of Habitus and other contextual sources of Social Capital.

4.4.2.9 Summary

Our findings reveal that although all of our empirical models explain the variation in an individual's likelihood of future HE participation sufficiently, model 4 is preferred. Recall that model 4 included controls for individual, background characteristics and a measure of cognitive ability as well as measures of Habitus, Cultural and contextual Social Capital. As already known from the educational attainment literature, we find a strong association between our measure of cognitive ability and HE participation. For instance our model implies that, a higher relative ranking in either or both 'Technical Skill' and 'Literacy Skill', increase an individual's likelihood of HE participation. Moreover, in accordance with the HE participation literature, family background characteristics also exhibit significant associations. Parent's highest educational attainment and NS-SEC both exhibit a positive and statistically significant relationship. Our results also show that having a parent whose NS-SEC class is defined as managerial & professional or has attained some form of HE, is also positively associated with HE participation. Furthermore, and in accordance with our first empirical chapter, we were unable to find a significant association with income. This result was somewhat to be expected, as our model controls for a much wider set of explanatory variables.

Unsurprisingly, given what we know from the literature, we find that ethnic grouping exhibits a particularly strong association with HE participation.

Our Cultural Capital and Habitus components were also found to be positively associated with HE participation. Notably, one of our Habitus components 'Aspirations for Further Study' was found to exhibit a larger relative association which amounts to about two-and-a-half times in magnitude that of our 'Cultural Capital' component. Our results also imply that the inclusion of measures of Habitus, reduced the predicted impact of Cultural Capital. This partly agrees with Gaddis (2013) who find that Habitus (in their case completely) mediates the reported Cultural Capital association. Furthermore, consistent with the findings in the first empirical chapter our results indicate that our Social Capital - young person networks component 'Outgoing' exhibits a negative and statistically significant association with HE participation. We hypothesised that this was likely to be due to more time spent in unstructured play and lower parental supervision.

We also observe some significant associations arising from particular elements of contextual sources of Social Capital. For instance, we observe a positive and significant association between HE participation and our Social Capital at home component 'Parental Aspirations for Young Person'. This is in line with Crosnoe (2004) who find that high parental educational aspirations for young person and a responsive parent-child relationship boost academic outcomes through the facilitation of parental resources. For Social Capital at school our results reveal that two of our components, namely: 'Parent-School Connectivity' and 'Parental Assessment of Schooling' have statistically significant associations. The former exhibited a negative association and the latter positive. Here we proposed that higher scores for the component 'Parent-School Connectivity' may reflect behavioural issues. As this probably constitutes one of the most frequently cited cases as to why a school needs to contact a parent. Moreover, the positive and statistically significant influence of 'Parental Assessment of Schooling', we think likely reflects both higher parental interest in and their child attends better resourced or managed schools.

4.5 Conclusion

This study has expanded on the preceding chapter in two ways: firstly, by incorporating a measure of Bourdieu's notion of Habitus in our analysis; secondly, by introducing additional Social Capital contexts (at home and at school). We began this empirical chapter by evaluating some recent contributions to the Habitus, aspirations-expectations-achievement and contextual Social Capital literatures. From the Habitus literature we noted that Dumais (2002) shows that Cultural Capital associations are mediated when a measure of a young person's Habitus is included. Gender also appears to have a substantial impact on both the size and significance of Cultural Capital in Bourdieusian operationalisations of these concepts. What also became clear however is that there is some debate as to whether Habitus serves a cultural reproduction or social mobility function, with the larger weight of evidence favouring the latter. Here we drew a parallel with this primarily US literature with some recent work in the UK relating to educational aspirations-expectations-achievement. Fort instance, Anders & Micklewright (2015) suggest that aspirations are initially greater than expectations and achievement with the gap reducing over time. Nevertheless, aspirations start lower and fall faster for those in lower socioeconomic groups. We also discussed some recent contributions to the Social Capital literature, particularly a recent trend to differentiate Social Capital into home and at school contexts. Through the course of this literature review, beginning with Parcel & Dufur (2001) and ending with Dufur et al. (2015), these Social Capital contexts were shown to exhibit statistically significant associations with a range of youth outcomes.

The purpose of this study was to investigate whether, in addition to individual and background characteristics, measures of Cultural Capital, Habitus and various sources of contextual Social Capital are associated with the likelihood of future HE participation. To address these research questions, we presented the results of five econometric models using a relatively recent and representative sample of English youth derived from the LSYPE. All of our empirical models included a set of individual and background controls, with models 2 and 3 including either principal component based measures, or the indicators themselves, for Cultural Capital and Social Capital – young person networks. Models 4 and 5, additionally included either the measures or indicators for Habitus and two further contextual sources of Social Capital at home and at school.

Our results demonstrate that the inclusion of Habitus and additional contexts of Social Capital lead to superior model fit. The results also show that our extracted components exhibit a number of statistically significant associations with HE participation. Our model implies that the majority of these result in a 7% to 14% increase in a young person’s chances of participating in HE, concerning a movement up or down a quartile. Some of the smallest statistically significant associations were exhibited by our Social Capital at school component ‘Parent-School Connectivity’ with the largest arising from our Habitus component ‘Aspirations for Further Study’. Excluding our controls for ethnicity, the largest single change we report comes from having parents whose highest educational qualification is HE undergraduate degree level or higher versus those with just 5 A*-C grades at GCSE. Our model implies that this change increases a young man’s and woman’s probability of HE participation by 76% and 69% respectively. Therefore, we believe that our findings have improved current understanding of HE participation by providing some of the first estimates of these additional sources of influence.

5. THIRD EMPIRICAL CHAPTER

"*Is there such a thing as a good school effect? Measuring the impact of school attended on HE participation for a recent British cohort (LSYPE)*"

5.1 Introduction

The previous empirical chapter provided evidence that our extended conceptualisation, which included a measure of Habitus and additional contextual sources of Social Capital, exhibit significant associations with an individual's likelihood of HE participation. However, our earlier analysis did not specifically account for school attended. This is important because school attended may influence the formation and impact of these capitals, whilst also exerting an independent association with young peoples' likelihood of HE participation. This latter point is of particular relevance as policy makers have placed increasing importance on parental school choice, through the publication of school league tables and other metrics. As such our research aims to explore whether controlling for school attended substantially affects our earlier reported Cultural and Social Capital associations. In addition, it aims to establish whether there is a 'good' school effect and what specific school characteristics are influential. To conduct our analysis, we estimate a series of multi-level models to determine the influences on the likelihood of HE participation for a recent cohort of young people drawn from the Longitudinal Study of Young People in England 2004 (LSYPE).

This chapter is structured as follows: Section 5.2 elaborates on the structure of the UK compulsory educational system and reviews a selection of recent contributions to the school and peer effects literature. Here we pay particular attention to how previous authors have controlled for school characteristics, in order to justify our own approach. In section 5.3 we outline the data we use and detail our analytical approach. In section 5.4 we describe our sample, elaborate on our main findings and discuss. Section 5.6 concludes.

5.2 Literature Review

In the previous chapters, we discussed the literature relating to the impact of individual and family background characteristics with respect to UK HE participation. We then identified that Cultural Capital, Habitus and contextual sources of Social Capital have are associated with a range of youth outcomes in primarily US based studies. In this chapter we outline the UK Educational system, then consider some recent contributions to the school and peer effects literatures with respect to child educational outcomes.

5.2.1 The UK compulsory education system and the school effects literature

In the UK most children are educated in schools on a full-time basis, although the law does allow for them to be home schooled[191]. Education law states that after their 5th birthday, non- home-schooled children must attend in the next academic year[192] and must do so until their 16th birthday[193]. In England students must then do one of the following until their 18th birthday: remain in full-time education, start an apprenticeship/traineeship or spend 20 hours or more a week working/volunteering whilst in part-time education or training. The DfE determines educational policy and is ultimately responsible for the quality of state-funded education, whilst Local Authorities[194] are responsible for implementing educational policy at the local level.

Schooling in the UK is split into five Key Stages: KS1 (ages 5 to 7) may take place in an infant school, with KS2 occurring in a junior school (ages 7 to 11). Both infant and junior schools are collectively grouped into primary schooling. Indeed, in many areas both KS1 and KS2 take place in primary schools. KS3, KS4 and KS5 (ages 11 to 14, 14-16 and 16-18 respectively) occur in high school and this is known as secondary schooling. KS3 is known as lower-secondary, KS4 as upper-secondary and KS5 as sixth form/college. At each Key Stage, pupils that attend schools that follow the National Curriculum are expected to achieve or surpass a specific level of national attainment.

Most schools do not have an intake that covers all Key Stages, some may operate as infant and/or junior schools (KS1 and KS2), whereas others only cater for secondary school age pupils (KS3 to KS4 and perhaps also KS5). In addition to schools, FE colleges also admit, teach and examine students at KS4, KS5 and sub-HE courses (above

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[191] Parents can apply for their child to be home schooled if this is their preference or it is deemed most appropriate.

[192] The academic year runs from 1st September until 31st August. Children can however attend reception the year before formal schooling begins. Nevertheless, in a minority of cases, the young person may end up attending school either a year early or a year late, depending on their specific needs.

[193] If a child turns 16 in the summer holidays (usually late-July until early-September) the child must remain at school until the last day in June.

[194] In May 2010, the term ‘Local Authority’ replaced what was formally known as either LEA or Children’s Services Authority.

A-Level but below undergraduate degree level). Of those attending schools, the 2017 school census details that approximately 91.28% are enrolled in maintained (state-funded) schools (DfE, 2017).

Maintained schools come in a variety of forms and may or may not be selective in their intakes. Such schools may be classified as an academy, community school, free school, foundation school, voluntary-aided school or voluntary controlled school (Eurydice, 2007). For community schools, Local Authorities own the land and buildings on which the school is based, have responsibility for admissions and employing the staff (whose salaries are set in accordance with the National Teacher pay scale). Alternatively, for foundation schools, responsibility for admissions and employing staff lays with the governing body, which may also own the land and buildings (these could instead be owned by a charitable organisation). For voluntary-aided schools, which can be faith denominated, it is the governors who have responsibility for admissions and employing the staff. However, the governing body must have contributed to at least 10% of the capital cost of the school. In voluntary controlled schools (usually a church school), the governing body owns the land and buildings, whereas the Local Authority controls admissions and employs the staff. Moreover, a small number of schools may also be classified as a City Technology College which is free of Local Authority control but overseen directly by the DfE.

In the past Academies, which are publicly funded independent schools, typically replaced poorly performing schools. The separation from Local Authority control, afforded them greater freedom to deviate from the National Curriculum, enabling them to better respond to their local educational challenges. More generally, the introduction of Academies marked the start of a trend away from direct control of education by Local Authorities to a more supportive role. This trend continued under the following Conservative-Liberal Democrat administration (2010-2015), which afforded further freedoms to schools and encouraged those still under direct Local Authority control to transfer to academy status. The law also enables formation of state-funded comprehensive free schools, which could be set up and controlled by teachers, parents and businesses in response to local educational needs.

Most secondary schools in England are comprehensive (Eurydice, 2007, p.13), admitting all abilities, but they may also be classified as grammar[195] or secondary modern schools[196]. Both of the latter types of schools are selective in their intakes with grammar schools taking around the top 25% of the ability distribution (pupils ranked in the highest quartile of the eleven-plus examination) and secondary modern schools taking the remaining 75%. Selective schools (particularly secondary moderns) were largely replaced across the UK and Northern Ireland, in the 1970s due to an educational policy shift towards a more comprehensive educational system.

As stated earlier, the DfE ultimately bears responsibility for the quality of educational provision in England. It monitors performance through regular inspections of all state-funded schools (and some independent schools) conducted by the Office for Standards in Education, Children's Services and Skills (Ofsted). The Ofsted inspection regime has been reformed over time, with school assessments now focusing more on school governance and procedural aspects. These now consist of a two to three day visit once every three years with two days' prior notice. The grading of schools was also simplified, with schools receiving one of four classifications: outstanding, good, satisfactory and inadequate. Regardless, schools with lower ratings are likely to be inspected more regularly particularly those in 'Special Measures[197]'. This is important because school performance tables and Ofsted reports are likely to be influential factors in determining a parent's preferred choice of school.

Parental choice is also likely to be influenced by school-level attainment. However, some schools may be disadvantaged by the aggregate measures used in league tables, e.g. number of A*-C grades at GCSE (Level 4 or above). Examples include schools that enrol a higher proportion of pupils from deprived backgrounds or who have special educational needs. These concerns have prompted a policy shift to publish value-added

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[195] Grammar schools are geographically clustered in areas around England, most notably: Buckinghamshire, Kent and Leicestershire. The reintroduction of grammar schools formed part of the Conservative manifesto for the election in June 2017, although this was subsequently dropped from the Queen's Speech.

[196] Over 100 of these schools remain in England, in counties which still operate a selective educational system, e.g. Buckinghamshire, Dorset, Kent, Slough, Stoke, Ripon and the Wirral.

[197] Pre-2005, 'Special Measures' was a status assigned to schools if deemed to be in urgent need of remedial action. Post-2005, schools are given a 'notice to improve' and then re-inspected after 12 months to see if improvements have been made. Being awarded this status gives the Local Authority the power to replace the board of governors and dismiss staff. However, it is also usually accompanied by an increase in resources.

measures[198] alongside more traditional achievement benchmarks to enable fairer like-for-like comparisons. Now having outlined the UK compulsory education system, in the remainder of this subsection we discuss some recent contributions to the school effects literature.

Typically, faith schools have been found to be associated with higher educational attainment. Gibbons & Silva (2011a) investigate the causal nature of this association, specifically whether higher attainment can be explained by selection into faith schooling. To conduct the analysis, the authors make use of a detailed national English student-level linked administrative dataset which also contains information on the participant's school. The dataset covers two cohorts of children aged 11 who sat their KS2 tests in 2002 and 2003. The authors argue that previous attempts to capture the impact of attending a faith school will likely be endogenous and suffer from omitted variable bias, as school choice is likely to be correlated with pupil achievement. Furthermore, increased autonomy in admissions may result in schools being able to observe specific characteristics that influence admissions which is not recorded in the data. To overcome these problems the authors estimate a variety of models in order to identify the true impact of attending a faith school. Specifically, the authors begin by estimating an individual-level value-added model of educational attainment, which also includes school characteristics and conditions KS2 attainment on KS1. The authors control for prior educational attainment through the addition of a large number of variables which capture achievement and residential postcode fixed effects. However, the authors argue that this is likely to represent an incomplete way of controlling for school choice[199]. To resolve this, they add secondary school type and school fixed effects to exploit the fact that selection into faith schooling occurs twice: once at primary and then again at secondary school. Lastly, they conduct a bounding exercise using the selection of observables as a guide to the selection of un-observables[200] by estimating the impact of primary school type on two groups: stayers and movers from faith schooling. Stayers refer to those who go on to attend a faith secondary school from a faith primary, whereas movers are those who go on to attend a secular school. The results confirm that although faith schools are positively associated with educational attainment, this appears to be entirely explained by pupil entry characteristics and school admission procedures.

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[198] Secondary schools which admit a higher percentage of pupils with good or excellent KS2 results, will likely receive a boost in future educational attainment, ceteris paribus. As such value-added measures help to reveal which schools achieve the highest educational multiplier.

[199] We refer the reader to Manning & Pischke (2006), who provide a fuller explanation.

[200] The authors' approach here was inspired by Altonji et al. (2005).

However, Gibbons & Silva (2011a) find an improvement of 2.7% in test performance between the ages of 7 and 11 in schools that are independent of local authority control.

In a second study, Gibbons & Silva (2011b) investigate the link between school quality, child wellbeing and parental satisfaction. The authors seek to address two broad research questions: first, how parent and child attitudes and experiences are linked to test score-based measures of attainment; second, whether parental assessment of school quality is positively associated with child wellbeing. To conduct their analysis the authors use child and parent responses to sweep 1 of the LSYPE, where pupils are in year 9 of secondary school (age 13 to 14), supplemented with additional school characteristics, socioeconomic characteristics of the local school area (on the Output Area level) and school area house price data (from the HM Land Registry). To address their first research question, the authors estimate a series of linear probability models (OLS) to predict child and parent attitudinal responses to the learning environment, as a function of school average test score-based measures of attainment. The models vary in terms of explanatory variables included: standardised KS2 point score, value-added measure and family background/school area characteristics. The authors use attitudinal responses as their dependent variables, for the child these relate to happiness at school, whether lessons are boring and whether the child likes their teachers. The set of parental attitudinal responses relate to assessment of schooling, namely: school quality rating, satisfaction with child's progress and teacher interest in their child. In the second part of their analysis, which assesses whether the parent and child's views about the school are reasonably well aligned, the authors present a series of raw and predicted correlations (adjusted for unobservable factors) of school characteristics with attitudinal variables. In addition, the authors also present the results of further regressions relating to parental satisfaction with school quality and average house price in the school area. The authors' findings suggest that parent and child views about their school are not well aligned and that judgement of school quality and satisfaction are only moderately correlated. For instance parental satisfaction with school quality appears to be strongly related to school academic performance and intake, whereas pupil satisfaction is more closely associated with enjoyment of the learning environment itself. The authors hypothesise that parents may gain utility from their children attending prestigious schools.

Dearden et al. (2011) argue that school league tables (which rank schools on average achievement) can provide misleading inferences as to which school would be best for pupils at different points on the cognitive ability scale. In order to test their assertion, the authors investigate the extent to which schools in England are differentially effective for students of varying cognitive abilities. To conduct the analysis, they utilise two cohorts of state school pupils in year 11 during 2006/07 and 2007/08 academic years. These cohorts were sourced from the NPD matched with PLASC returns. For the main analysis, the authors estimate four probit models, where the dependant variable takes a value of 1 if the school is differentially effective and 0 otherwise[201]. These models assess: first, whether a wider range of abilities makes it harder for schools to add value; second, whether having a narrower range of abilities within a school makes it less likely to be differentially effective; third, whether the addition of school characteristics affects the previous findings; lastly, whether the addition of mean GCSE score, controlling for prior attainment at KS2, makes higher achieving schools more likely to be differentially effective. Staggered controls were included for: KS2 decile, KS2 standard deviation, polynomial terms for number of pupils, number of prior attainment groups, gender, ethnicity and mean GCSE points score. As expected, the results indicate that schools which add greater value are more likely to be differentially effective. Importantly, the authors find that around one quarter of schools in England appear to be differentially effective. This implies that league tables should, rather than show average value added, break this down by prior attainment group to present a more accurate view of the schools' contribution. This would help parents assess which school can maximise their child's potential, whilst also providing schools with an incentive to improve performance across the full ability range.

Slater et al. (2012) investigate the impact teachers have on GCSE attainment at age 16. In order to conduct their analysis, the authors utilise a primary dataset of examination results from 33 schools between 1999 and 2002; supplemented with the NPD and information on teachers[202] from the Database of Teacher Records. The data contains information relating to 7,305 pupils and 740 teachers who taught them in three core subjects (English, Mathematics and Science). Specifically, the authors pursue two strategies to measure teacher effectiveness. They begin by reporting the within-school variation in teacher effectiveness, net of all school factors. Reasoning that this serves as a lower bound due to the omission of unobserved school-level factors which may be

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[201] To assess whether a school is differentially effective the authors compare and contrast whether significant differences (p-value ≤ 0.05) arise between deciles of fine-graded KS2 scores (controlling for pupil characteristics), school mean GCSE scores and current-value-added scores between KS2 and KS4.

[202] Information available on teachers include their gender, age, experience, salary, education, degree classification and discipline.

correlated with teacher effectiveness. They then use subsidiary regressions to purge observable school effects from the estimates. Their results reveal that teachers matter, as having a good teacher raises GCSE attainment by 0.27 s.d.. Moreover, teacher characteristics do not appear to be associated with teacher quality, although these characteristics appeared to matter with respect to determining salary. These findings imply that if teacher quality is randomly distributed across schools, choice of school attended is unimportant whilst teacher assignment within the school is. However, the authors caution against taking their results at face value as the presence of good teachers may attract other good teachers.

In a recent working paper Burgess et al. (2017) assesses the role of grammar schools in promoting social mobility[203]. Specifically, the authors set out to answer five key questions relating to: variation in access to grammar schools by socioeconomic status and equality of HE outcomes between selective and non-selective schooling areas. To conduct their analysis, the authors use a sample of English students who sat their GCSE examinations between 2003 and 2006; who then went on to attend a university in the UK at age 18 or 19 between 2005 and 2009. Their sample was drawn from the NPD with entries subsequently linked to HESA records. To inform on comparative access to grammar schools, the authors conduct a descriptive analysis comparing the proportion of matched students (pupils attending non-selective schools that achieve similar KS2 attainment) in selective and non-selective areas by socioeconomic status. For the main part of the analysis, the authors estimate two broad sets of linear probability models. Each of these is estimated for: those attending grammar or matched schools (in non-selective areas), those pupils who achieve in the bottom or top 50% at KS2 between selective and non-selective areas. The first set of models assesses the likelihood of HE participation between selective and non-selective areas, whereas the second assesses HE outcomes. In both cases the raw differences between specific groups are presented, followed by the differences that remain after applying a set of primary and then secondary controls (HE outcomes only). Primary controls include: gender, ethnicity, region, year of GCSEs, socioeconomic status quintile[204], KS2 English, Mathematics and Science quintiles. Secondary controls included a set of individual-level school variables (as in Crawford, 2014). These included: GCSE English, Mathematics scores, number of

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[203] This paper was likely motivated by the 2017 Conservative government's manifesto pledge to establish a new generation of grammar schools.

[204] The authors compute their measure of socioeconomic status as in Chowdry et al. (2013) which uses eligibility for FSM and other very-local area-based measures sourced from the 2001 census.

A* (excluding GNVQ), A, B, C, D-G grades in EBacc/GCSE/GNVQ subjects, number of Level 2 A-C quintile, FE and vocational qualifications. The descriptive analysis reveals substantial differences between grammar school attendances by socioeconomic status, even after taking into account prior KS2 attainment. Moreover, the regression analysis suggests that conditioning on KS2 attainment those who attend grammar schools versus their peers who do not (just missed out group) are more likely to participate in HE by 22ppts, attend high-status institutions by 17ppts and achieve a good degree classification by 3ppts. The authors conclude, given the combination of inequality in access and the fact that grammar schools appear to harm bright students who just miss out, rather than promoting social mobility that the selective school system contributes to maintaining inequality.

In this subsection we introduced the UK compulsory educational system and the respective roles of the DfE, Local Authority and Ofsted in ensuring the quality of state-funded education. We then discussed some recent contributions to the UK school effects literature. For instance, Gibbons & Silva (2011a) found that the positive association with educational attainment exhibited by faith schools appears to be largely driven by pupil characteristics. In a separate study, Gibbons & Silva (2011b) report that parent and child school views seem to be misaligned, with parent satisfaction of a child's school more closely related to general school attainment. Dearden et al. (2011) find that up to 25% of schools may be differentially effective for children with varying abilities. Slater et al. (2012) found that teacher quality was an important determinant of educational outcomes. Finally, Burgess et al. (2017) argue that rather than promoting social mobility, a move away from the comprehensive system towards the re-introduction of ability-based schooling will raise inequality. In the next section we consider who peer effects might also exert an influence and consider some recent contributions to the literature.

5.2.2 Peer effects literature

Sacerdote (2011) defines peer effects as

> "*encompass[ing] any externality in which peers' background or current behaviour effect an outcome*" (Sacerdote, 2011, p.249).

It is important to discuss peer effects in the context of this study, as this might provide an alternate explanation and mediate some of the associations we observe with HE participation. For instance, the school's location and/or catchment area could influence both the nature and composition of the student cohort. Indeed, this might even have implications for Social Capital formation, because peer group homogeneity might facilitate the formation of close bonds (Putnam, 2000 – Bonding Social Capital) and increase their influence via a stronger transmission mechanism. There is also a debate in the Social Capital literature that more heterogeneity may lead to looser ties, which might be more important from a social mobility perspective.

A variety of mechanisms have been proposed in the education literature to explain how peers might exert an influence on student academic outcomes. For example, the presence of particularly weak or troubled students may place additional strain on teachers or result in disruptive behaviour that influences others[205] slowing class progress. Conversely, the presence of particularly bright and industrious learners may help to facilitate peer learning, although this may also act to disengage the less-able. Separately, if we assume that a wide variance in academic ability within a class places strain on teachers, increasing class homogeneity may improve learning outcomes. It might however, also be the case that too much homogeneity may lead to harmful competitive effects. For instance, a large degree of homogeneity within a peer group in terms of ability may disengage the relatively less-able by highlighting their underachievement, whist intense competition may have adverse implications on pupil wellbeing. Nevertheless, establishing whether peers exert a significant influence on educational attainment and identifying the most plausible mechanism through which peer effects operate is important. This goal however is however fraught with empirical difficulty. For instance, some teachers may be able to create more Human Capital irrespective of class composition. On the other hand, some schools may offer more conducive environments for academic achievement, etc. In the remainder of this section we review a number of recent studies that have sought to isolate and quantify peer effects using a range of competing methodologies. We conclude with a meta-review by Angrist (2014).

Robertson & Symons (2003) argue that conventional measures of school quality are poor predictors of educational success. Specifically, the authors estimate an educational production function to control for peer effects in order to assess whether parental attributes affect academic attainment. They do this using a sample derived from the NCDS, looking first at reading and Mathematics scores at age 7 and then again for the

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[205] Inappropriate behaviour will, of course, divert the attention of the teacher and other members of the class slowing educational progression.

improvement between the ages of 7 and 11. Note that this data pre-dates the shift from a selective to comprehensive educational system. In the final part of the analysis the authors assess the implications of this with respect to earnings at age 33[206]. The authors then proceed to estimate an educational production function (which consists of peer group, parental inputs and schooling) separately for those schools that separate children into ability streams for teaching purposes (setting) and those that do not. Empirically, in order to distinguish between school factors and peer effects, the authors utilise IV[207] analysis in conjunction with OLS[208] to treat endogeneity[209] as well as conducting a series of Monte Carlo simulations. Their main methodological innovation here is to more rigorously test and in so doing nominate a set of credible instruments relating to region of birth; enabling unbiased estimation of the educational production function. The authors then proceed to estimate the association with earnings for each gender. The results imply, as expected, that parental social class and education have a large impact on reading and Mathematics improvement between age 7 and 11[210]. More importantly, the authors find strong evidence in favour of the importance of peer groups. To contextualise these associations the authors provide an illustrative example. This example assumes that the cohort member is male, their father is in the top socioeconomic group, both parents stayed on past compulsory education and the pupil attends an un-streamed school at which 50% of the pupils also have a father in the top socioeconomic group. Using this Robertson & Symons predict an increase of 17.0 and 19.4 points in Mathematics and reading scores at age 7 compared to a reference case using represent values. Moreover, the continued impact of parents and peers increases Mathematics and reading scores by a further 33.4 and 22.3 points by age 11. Earnings wise, this translates into an extra 33% (lower bound), in income compared to those possessing the lowest attribute values.

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[206] Explanatory variables included: reading/Mathematics score (age 7), peer group (top/bottom stream), parent quality (father social status and whether parents stayed on after compulsory education), parent time (mother labour market participation, no father and family size), school quality (class size), gender and Scotland (distinct educational system).

[207] Monte Carlo simulations were also conducted which appear to suggest that, although bias is a minor problem in the data, it negatively impacts upon the estimated effect of the authors' key peer group variable.

[208] IV estimates were generally larger than those computed using OLS, which suggests measurement bias prevails over choice-theoretic bias.

[209] If parents actively choose a location with a view to enhancing the attainment of their children, it could be argued that these instruments are endogenous. The authors do however conclude that this is unimportant in their data due to a lack of mobility shortly after birth.

[210] The evidence provides little support for smaller class sizes exhibiting a positive effect on academic attainment. The evidence does, however, indicate that streaming pupils into classes by ability benefits stronger students while worsening outcomes for weaker students.

Lavy et al. (2012) assess the size and importance of ability peer effects in schools using four national cohorts of English secondary school pupils (linked dataset combining NPD and PLASC entries). Specifically, the authors identify ability peer effects by using national test scores in English, Mathematics and Science at age 11 (between 2000/01 and 2003/04) and age 14 (between 2003/04 and 2006/07). Their identification method uses pupil fixed effects to exploit variation across these subjects, enabling them to directly measure peer quality rather than relying on family background characteristics. Their main contribution is to overcome the school selection problem, whilst separately assessing the association between the child and their peers' subject-to-subject outcomes. The results suggest that it is the presence of less academically able peers (i.e. those in the bottom 5% of the conditional ability distribution), who are detrimental to the learning of others. Furthermore girls, unlike boys (who marginally lose out), appear to benefit from academically bright peers, i.e. those in the top 5% of the conditional ability distribution. This impact equates to an approximate increase of 0.1 s.d. of the within-pupil KS3 distribution if the percentage of less able peers declines by 10 percentiles. They observe a similar impact for girls with respect to more able peers, whereas boys stand to lose 0.05 s.d..

A common approach adopted in the school and peer effects literatures is to use school movers to isolate peer effects. Kramarz et al. (2014) argue that endogeneity concerns may bias previous findings, as non-compulsory movers (those children who could remain in the same school through years 1 to 6 – aged between 5 and 11 who do not) on average have markedly different family background characteristics, experience large drops in academic achievement in years 2 to 6 and attend a new school that is further away on average. On the other hand, compulsory movers (those whose attend schools that only cater for years 2 and 3 and so must change schools) do not appear to differ substantially from stayers. Specifically, the authors utilise three cohorts of pupils (1998 to 2002, 1999 to 2003 and 2000 to 2004) derived from the NPD, from the end of KS1 (age 7) through to the end of KS2 (age 11). Their empirical investigations have two main parts: first, they conduct an assessment of compulsory and non-compulsory mobility in terms of demographics, test scores and parental choice; second, they establish the extent of endogeneity by using a first differencing procedure on estimates derived from an educational production function for all movers. The results, however, provide no support for endogenous sorting by either peer group or school. They also show that including non-compulsory movers in the analysis, who on average perform less well academically, appears to negatively bias estimates of school quality by as much as 0.2 s.d.. This is important as non-compulsory movers on average tend to move to higher quality schools, thus the difference between good and bad schools may be under-stated.

Gibbons & Telhaj (2016) investigate how prior academic attainment of peers influences a student's secondary school attainment. Their identification strategy is to utilise cohort variation which stems from the transition from primary to secondary school between KS2 and KS3. The authors estimate a value-added educational production function which consists of peer group, parental inputs and schooling, utilising four cohorts (between 2004/5 and 2007/08) sourced from the English administrative data NPD-PLASC linked dataset. This is aggregated to secondary-school-by-cohort level. Aggregating the data enables first and second differences to be taken between cohorts without any corresponding loss of information. This also has the added benefit of being able to remove salient fixed and trending factors. The authors' results reveal that changes in peer quality matter for educational attainment at KS3 (age 14) but the estimated impacts are small and linked to peers' family background and early age achievements. Insofar that a 1 s.d. increase in the KS2 intake is associated with a 0.02 s.d. increase in pupil achievement at KS3. Their results also provide little evidence for heterogeneous or complementary effects across students.

So far the attention in the literature has focused on estimating the impact of those who change schools (movers) whilst relatively little attention has been paid to spill-overs, i.e. the effect on those that remain (stayers). In a later paper Gibbons et al. (2017) investigate whether neighbourhood stability matters with respect to academic performance. The analysis consists of two parts: the authors begin by estimating a linear educational production function which includes a range of controls for student, neighbourhood and school characteristics to determine the impact of same-school-grade mobility on value-added measures of attainment between KS2 and KS3 for four cohorts of stayers. Stayers, in this instance, are those who remain in the same residential neighbourhood between years 7 and 9. These four subsets of pupils were derived from the NPD, are aged between 13 and 14 (year 9) and took their KS3 assessments in 2005 through to 2008. In defining residential neighbourhood, the authors use postcode data to assign individuals to census Output Areas. Neighbourhood-by-cohort turnover rates is defined as the inflow and outflow rates of same-grade students in a given cohort. The authors then, utilising a sample derived from the LSYPE, investigate whether residential mobility impacts upon social connectivity. This is estimated in a similar fashion to the earlier analysis to determine the influences on five binary measures of social connectedness and a composite measure[211], namely: friend visited own home, visited a friend's home, part of a youth club, been excluded from a group of friends and stays home in free time. Their results indicate that neighbourhood stability matters, as a 1 standard deviation increases in residential turnover reduces value-added measures of performance at KS3 by between 0.03 and 0.04 of a standard deviation. Moreover, there appears to be a degree of heterogeneity on the estimated impact between different groups. For instance, the implied effect on those eligible for FSM and on boys appears to be greater. The former is consistent with the intuition that these households may be less able to cope with the disruption due to a lack of other household resources. The results suggest that increased neighbourhood turnover is associated with a decline in the authors' composite measure of social connectivity by around 0.049 of a standard deviation.

Angrist (2014) in a meta-review of the peer effects literature, argues that a large number of studies suffer from a range of identification issues, measurement errors or inadvertently give spurious associations depending on the empirical framework adopted. Nevertheless, he does go on to argue that studies that incorporate two important design features may offer a way to obtain evidence on the size and predictive value of peer effects. Firstly, it is essential that researchers are clearly able to distinguish between the subjects and individuals who provide the casual mechanism in a peer effects investigation. Secondly, researchers must construct an empirical framework where it can reasonably be expected that OLS and 2SLS estimates coincide in the absence of peer effects. Angrist does however remark that the few studies that have adopted similar design features have uncovered little evidence of peer effects, casting doubt on the intuition that peers matter.

In this subsection we explained what peer effects are, the confounding influence of teacher and school selection effects and elaborated on some recent contributions. Specifically Robertson & Symons (2003) report, after controlling for peer effects, substantial associations between parental social class and education on the one hand and academic performance and future labour market earnings on the other. Lavy et al. (2012) find that the presence of those at the bottom of the conditional ability distribution has a negative impact on the academic attainment of others. They also report evidence which suggest girls (unlike boys) benefit from academically bright peers. Moreover, Gibbons & Telhaj (2016) find that although peer quality does matter with respect to educational

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[211] This follows Kling et al. (2007) and it is computed by summating the responses to the first three binary variables minus the latter two.

attainment, the estimated impacts are small in comparison to individual and family background characteristics. Separately, Kramarz et al. (2014) find that non-compulsory movers from primary schooling negatively bias attainment-based measures of school quality. Gibbons et al. (2017) in a change of focus from the literature report that neighbourhood stability matters with respect to educational attainment for residential stayers. We concluded with a meta review by Angrist (2014), which highlights the empirical difficulty of establishing the size of peer effects and the mechanisms through which they operate. Although, the author notes that the more robust studies, those adhering to his recommendations for best practice, typically find peers exert a small overall impact.

5.2.3 Summary

In this chapter we reviewed details of the UK state-funded compulsory educational system, then elaborated on a selection of contributions to the school and peer effects literatures. We presented evidence that schools and peers have been found to exhibit statistically significant associations with educational attainment although establishing causal associations has proved challenging. Given that our earlier empirical work focused on individuals and omitted school effects, these findings constitute our primary motivation to extend our analysis.

5.3 Methodology

5.3.1 Data

In the preceding chapter we established that elements of our extended conceptualisation, which included a measure of Habitus and additional contextual sources of Social Capital, exhibit important influences on an individual's likelihood of HE participation. This chapter aims to establish whether there is an additional 'good school' effect and whether controlling for this mediates our reported Cultural and Social Capital associations. To conduct the analysis, we again utilise a sample derived from the LSYPE[212]. Aside from being a rich source of capital indicators, the LSYPE also contains information on school attended. Nevertheless, we supplement this data further by sourcing additional variables from the DfE.

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[212] For more details on the LSYPE and its design please refer to section 4.3.1.

5.3.2 Analytical approach

A relatively straight-forward way to control for the two-stage stratified design of the LSYPE, where schools were initially sampled and then the pupils within them, is to use cluster-robust standard errors. However, this method only treats the statistical problem caused by correlation in the error term; it does not capture the school effect in which we are interested. Another alternative might be to adopt a pseudo- fixed effect type approach[213] by incorporating school dummies. This analytical approach originated in experimental design where typically, and unlike in our case, the number of groups are small and all groups are sampled. This would lead to questionable model efficiency, as we would need to include an additional 542 dummy variables. Furthermore, including a dummy for each group, when group size is on average small, may make estimated group effects unreliable. A third and our preferred option is to use a multi-level model. These come in two forms: (1) random-intercept and (2) random-intercept and random-coefficient model. Both forms overcome the drawbacks of a pseudo- fixed effect approach. Under a random-intercept model, modelling efficiency is superior as only one additional parameter is estimated for school variance. Secondly, the technique is also more conservative as residual estimates for groups with small sample sizes are shrunken towards zero. However, this does require adequate sampling otherwise there is likely to be insufficient variation for useful analysis[214]. This is an important consideration, which we come back to in our later discussion. On the other hand, a random-intercept and random-coefficient model additionally allows variables to exhibit differential associations between schools. This is an important consideration as certain individual characteristics may affect progression to HE differently depending on school attended. For the interested reader we refer you to Goldstein (2011) who give a comprehensive account of the theory behind multi-level models. Lastly, we also have precedence in the Social Capital literature to use multi-level modelling, e.g. Dufur et al. (2013a), Hoffmann & Dufur (2008) and Crosnoe (2004). Hoffmann & Dufur (2008) are a particularly notable example as they also use school attended as a random intercept. For these reasons, we therefore elect to use a multi-level modelling framework.

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[213] Note that we cannot adopt a typical fixed or random effect modelling strategies, which are more common in the field of Economics, as we use cross-sectional data with our dependent variable taken from a later sweep. Fixed-effects models, unlike random effects, assume that individual-specific effects are correlated with explanatory variables.

[214] There is currently no consensus on this but figures of around 10 observations per group is usually used as a rule of thumb.

In the proceeding analysis, we begin by estimating a single-level weighted logistic (logit) model to contextualise our results with our earlier findings. Then estimate the same model but using a random-intercept specification. We then trial including a number of school-level explanatory variables to determine whether these characteristics account for some of the variance in HE participation we attribute to schools. Lastly, we then estimate a random-intercept and random-coefficient model; after trialling a number of pupil-level variables that we hypothesise might exhibit differential effects between schools. We estimate these models (using the melogit command) in Stata 14 (whilst also at times utilising the runmlwin package) in order to inform on the likely influences affecting HE participation by age 20.

5.3.3 Econometric model

In our analysis, we estimate four distinct models. All models contain the following vectors: young person (YP_i), background characteristics (BG_i), Key Skill (KS_i), Cultural Capital (CC_i), Habitus (HAB_i), Social Capital - young person networks ($SCYPNET_i$), Social Capital at home ($SCHM_i$), Social Capital at school ($SCSCH_i$) and school characteristics (SCH_j). For a full description of these vectors we refer the reader to sections 4.3.3 in the prior empirical chapter. Summary statistics and loading matrices for the PCA (e.g. $KS_i, CC_i, HAB_i, SCYPNET_i, SCHM_i, SCSCH_i$) in this chapter, can be found in the appendices (Appendix 8.20 to 8.25). However, due to controlling for school attended, school characteristics and the risk of over-specifying our model, we did remove three individual-level control variables from our vector YP_i and two from our vector BG_i. These were: whether the young person has a disability (no, yes – schooling not affected and yes – schooling affected), receives extra-tuition in subjects studied, receives extra-tuition in supplementary subjects, number of older and separately number of younger siblings. Note in the previous chapter the only statistically significant (p-value ≤ 0.05) association came from the coefficient associated with extra tuition in school subjects.

Model 1 estimates the influences on HE participation using a single-level logistic model in order to provide a baseline for comparison.

$$HEP_i \sim Binomial(cons_i, \pi_i) \qquad \textbf{(13)}$$
$$logit\ (\Pi_i) = \int(YP_i, BG_i, KS_i, CC_i, HAB_i, SCYPNET_i, SCHM_i, SCSCH_{ij})$$

Model 2 estimates a two-level logistic model with a random school intercept.

$$\begin{array}{l} HEP_{ij} \sim Binomial(cons_{ij}, \pi_{ij}) \\ logit\,(\Pi_{ij}) = f(YP_{ij}, BG_{ij}, KS_{ij}, CC_{ij}, HAB_{ij}, SCYPNET_{ij}, SCHM_{ij}, SCSCH_{ij}) \\ \beta_{nj} = \beta_n + u_{nj} \\ \left[u_{xj}\right] \sim N(0, \Omega_u): \Omega_u = \left[\sigma^2_{un}\right] \\ var(HEP_{ij}|\pi_{ij}(1-\pi_{ij}))/cons_{ij} \end{array} \qquad \mathbf{(14)}$$

Model 3 and 4 build on this by also containing a vector of school-level characteristics (SCH_j). This vector contained the following indicators: whether the school has a sixth form, is selective in its admissions (grammar school), percentage of school roll eligible for FSM and condensed Ofsted bands[215].

$$\begin{array}{l} HEP_{ij} \sim Binomial(cons_{ij}, \pi_{ij}) \\ logit\,(\Pi_{ij}) = f(YP_{ij}, BG_{ij}, KS_{ij}, CC_{ij}, HAB_{ij}, SCYPNET_{ij}, SCHM_{ij}, SCSCH_{ij}, SCH_j) \\ \beta_{nj} = \beta_n + u_{nj} \\ \left[u_{xj}\right] \sim N(0, \Omega_u): \Omega_u = \left[\sigma^2_{un}\right] \\ var(HEP_{ij}|\pi_{ij}(1-\pi_{ij}))/cons_{ij} \end{array} \qquad \mathbf{(15)}$$

We trialled (but do not present) adding additional school-level characteristics to model 3, e.g. single-sex schools and school type[216]. Some of which should be available from the PLASC but was not made available to us. As such, we are aware that we have not comprehensively captured school contextual factors, as we did not have access to data relating to: average entry, teacher experience, teacher qualification, cohort progression rates into FE/HE, etc. Moreover, we also tested a variety of within- and cross-level interactions, namely: Key Skill indicators interacted with selected school characteristics (whether the school is selective, percentage of school roll eligible for FSM and Ofsted classification), 'Cultural Capital' with select school characteristics (selective and sixth form), Habitus with selected school characteristics (selective and sixth form) and Social Capital at home/school with Ofsted. This was designed to assess whether any boosting

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[215] This data was requested separately from the DfE Longitudinal Team and was provided by Tim Thair. Schools can receive 7 ratings (bands) from Ofsted: excellent, very good, good, satisfactory, unsatisfactory, poor and very poor. Due to very small numbers of schools receiving a rating of very poor, it was appropriate to merge this with poor, leaving 6 bands. Based on earlier regressions, we could find little difference between bands: excellent, very good and good. These were combined leaving four bands: poor/very poor, unsatisfactory, satisfactory and excellent/very good/good. A parameter equivalence test in STATA yielded a p-value of 0.143. Expanding this to also incorporate the band satisfactory with excellent, very good and good yields a p-value of 0.0596. We opted not to group this with the other categories, based on the proximity to the critical value.

[216] Academies and City & Technical Colleges are not subject to all aspects of Educational Law whereas community, foundation, voluntary-aided and controlled are.

or compensating effects were present. However, again none of these were found to exhibit statistically significant associations with HE participation.

Model 4 extends this by including a random coefficient for the ‘Literacy Skill’ component[217].

$$\begin{aligned}
&HEP_{ij} \sim Binomial(cons_{ij},\pi_{ij}) && \textbf{(16)}\\
&logit\ (\Pi_{ij}) = \int(YP_{ij}, BG_{ij}, KS_{ij}, CC_{ij}, HAB_{ij}, SCYPNET_{ij}, SCHM_{ij}, SCSCH_{ij}, SCH_{j})\\
&\beta_{n\text{-}xj} = \beta_{n\text{-}x} + u_{(n\text{-}x)j}\\
&\beta_{nj} = \beta_{n} + u_{nj}\\
&\begin{bmatrix} u_{(n-x)j} \\ u_{xj} \end{bmatrix} \sim N(0, \Omega_u)\colon \Omega_u = \begin{bmatrix} \sigma^2_{un-x} & \\ \sigma_{u(n-x)n} & \sigma^2_{un} \end{bmatrix}\\
&var(HEP_{ij}|\pi_{ij}(1\text{-}\pi_{ij})/cons_{ij}
\end{aligned}$$

Where i refers to the individual and j to the school.

Here we also tried specifying model 3 with 'Technical Skill' and household income separately as random coefficients. Our approach here (in addition to specifying ‘Literacy Skill’ as a random coefficient) was inspired by Dearden et al. (2011) who find that a proportion of schools appear differentially effective across the cognitive ability range. Furthermore, we also trialled including LEA as a third level, with individuals and schools being the first and second levels respectively. However, in these two latter cases, no statistically significant associations/improvement in model fit were found.

We estimate each of these models (excluding 4) three times, once for the entire sample and once more with respect to each gender. We do not present the results for model 4 for the male and female subsamples, as the random coefficient for ‘Literacy Skill’ became insignificant, probably on account of the reduction in sample size. Furthermore, in order to investigate some empirical subtleties, we re-estimated (model 3) six additional times, each time restricting the sample by either low or high household income, ‘Technical Skill’ and ‘Literacy Skill’. This was done in order to observe changes in the associations exhibited by our explanatory variables between within group. For instance, does attending a selective school (grammar) matter more for those individuals who come from less affluent backgrounds?

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[217] We trialled a number of random coefficient models: on the pupil level, these consisted of household income, ‘Technical Skill’ and ‘Literacy Skill’. On the school-level, these were sixth form, percentage of pupils eligible for FSM and Ofsted bands. Our approach here was inspired by Dearden et al. (2011), who show that a proportion of schools appear differentially effective. Of those tested, only the ‘Literacy’ component turned out to result in a better, albeit weakly significant ($p \leq 0.10$), fit after conducting a global Wald test.

5.4 Analysis

5.4.1 Descriptive statistics

We do not present a table of individual-level descriptive statistics for this new sample in the main text; due to the fact that it contains a similar number of observations (albeit 528 fewer) than that which we used in our previous empirical chapter. For the interested reader, we direct you to Appendix 8.26 which contains a complete table of individual-level sample descriptive statistics. Nevertheless, we do present here a table of school-level descriptive statistics.

Table 14: School-level descriptive statistics comparing non- and participants in Higher Education using our estimation sample, male and female subsamples using the Longitudinal Study of Young People in England 2004

		Sample		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Schools *(s.)*		513	497	427	377	420	412
School has a sixth form	Yes (%)	56.92	59.76	56.44	58.89	57.14	59.95
Grammar school	Yes (%)	2.73	4.23	2.58	4.24	Restricted	2.43
Pupils on school roll eligible for Free School Meals	School roll (%)	18.54	17.70	17.41	16.17	17.18	16.76
Ofsted band	Excellent/very good/good (%)	69.79	73.44	68.85	74.54	70.48	75.49
	Satisfactory (%)	22.03	19.72	22.72	19.10	21.67	17.72
	Unsatisfactory/poor/very poor (%)	8.19	6.84	8.43	6.37	7.86	6.80

Table notes: Those statistics containing less than 10 unweighted individual-level observations were either replaced with 'Restricted' or categories were merged where this was not suitable in accordance with disclosure controls. Categories merged included Ofsted band unsatisfactory with poor/very poor. We do not conduct mean-comparison tests on these school-level descriptive statistics as our samples, comparing non-participants and participants, overlap. As the standard test assumes independence between the samples. Nevertheless, recently efforts have however been made to devise a reliable method, e.g. Derrick et al. (2015).

According to our sample, these statistics show that, compared with non-participants in HE, participants are more likely to attend a school with a sixth form (4.99%), more likely to attend a selective school (54.95%), attend a school rated as excellent/very good/good by Ofsted (5.23%) and attend a school whose school roll has a lower percentage of its pupils eligible for FSM (-0.84ppts).

5.4.2 Discussion

This discussion section begins by assessing the goodness-of-fit of our various models to determine which is preferred. We then move on to discuss our results.

5.4.2.1 Assessing goodness-of-fit

After conducting a series of global Wald tests, we select model 3 as our preferred model, as it represented a superior fit to either model 1 or 2. This includes a random intercept for school attended in addition to school-level characteristics. Moreover, we prefer model 3 to 4, given that 'Literacy Skill' when specified as a random coefficient for the male and female subsamples is found not to significantly improve model fit. Nevertheless this is found to be the case after conducting a Global Wald test for the estimation sample, hence why we also present the results for model 4 for comparison purposes.

5.4.2.2 Results

Table 15: Weighted individual- and school-level logistic regression output estimating the influences on the probability of participation in Higher Education using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations			
	(1) Weighted Logit	**(2) Weighted Logit - School Random Intercept**	**(3) (2) plus School-level Characteristics**	**(4) (3) plus Key Skill - Literacy Random Coefficient**
	(Single-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
Pupils (*n.*)	4,289	4,289	4,289	4,289
Schools (*s.*)	-	543	543	543
Constant				
	-2.194***	-2.222***	-1.994***	-2.018***
	(0.240)	*(0.249)*	*(0.286)*	*(0.292)*
INDIVIDUAL-LEVEL CONTROL VARIABLES				
Gender - Dummy variable (Base case: Female)				
Male	-0.162*	-0.179**	-0.219**	-0.234***
	(0.091)	*(0.089)*	*(0.088)*	*(0.090)*
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)				
Dec'89 to Aug'90	0.322***	0.348***	0.340***	0.347***
	(0.099)	*(0.098)*	*(0.099)*	*(0.100)*
Single parent household - dummy variables (Base case: No)				
Yes	-0.056	-0.045	-0.066	-0.076
	(0.122)	*(0.127)*	*(0.128)*	*(0.130)*
Household income - Work, benefits and anything else for main parent and second parent				
£s per annum	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)				
Managerial & professional	0.408**	0.416**	0.368**	0.391**
	(0.181)	*(0.187)*	*(0.187)*	*(0.189)*
Intermediate	0.528**	0.529**	0.502**	0.523**
	(0.220)	*(0.224)*	*(0.225)*	*(0.227)*
Small employers & own account workers	0.323	0.311	0.286	0.304
	(0.197)	*(0.200)*	*(0.200)*	*(0.202)*
Lower supervisory & technical occupations	0.137	0.123	0.049	0.062
	(0.202)	*(0.209)*	*(0.212)*	*(0.214)*
Semi-routine	0.210	0.204	0.187	0.203
	(0.208)	*(0.218)*	*(0.218)*	*(0.221)*
Unemployed	0.342	0.344	0.306	0.351
	(0.324)	*(0.339)*	*(0.348)*	*(0.350)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)				
HE undergraduate degree or higher	0.931***	0.914***	0.881***	0.890***
	(0.141)	*(0.149)*	*(0.148)*	*(0.151)*
Lesser HE	0.437***	0.426***	0.408***	0.407***
	(0.132)	*(0.133)*	*(0.134)*	*(0.136)*
A-Level	0.099	0.091	0.092	0.095
	(0.125)	*(0.131)*	*(0.130)*	*(0.132)*
Other	-0.377	-0.400	-0.381	-0.371
	(0.303)	*(0.344)*	*(0.348)*	*(0.353)*
Level 1	-0.219	-0.248	-0.245	-0.258
	(0.219)	*(0.230)*	*(0.229)*	*(0.231)*
None	-0.156	-0.175	-0.118	-0.106
	(0.194)	*(0.198)*	*(0.199)*	*(0.203)*

Table 15 (Continued)

	Empirical Estimations			
	(1)	**(2)**	**(3)**	**(4)**
	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
Index of Multiple Deprivation 4 Quantiles (Base case: Quantile 4)				
High-medium	0.246*	0.235*	0.092	0.083
	(0.129)	*(0.129)*	*(0.134)*	*(0.136)*
Low-medium	0.584***	0.606***	0.442***	0.436***
	(0.138)	*(0.146)*	*(0.154)*	*(0.157)*
Low	0.796***	0.810***	0.620***	0.624***
	(0.142)	*(0.149)*	*(0.160)*	*(0.162)*
Key Skills				
Technical Skill	0.591***	0.605***	0.563***	0.578***
	(0.062)	*(0.062)*	*(0.061)*	*(0.062)*
Gifted and Talented	0.073	0.067	0.040	0.034
	(0.052)	*(0.053)*	*(0.054)*	*(0.055)*
Literacy Skill	0.274***	0.275***	0.255***	0.280***
	(0.053)	*(0.057)*	*(0.057)*	*(0.057)*
Ethnic group - Dummy variables (Base case: White-British)				
Indian subcontinent	1.793***	1.855***	1.913***	1.931***
	(0.180)	*(0.185)*	*(0.187)*	*(0.188)*
Black-Caribbean	0.257	0.251	0.255	0.256
	(0.283)	*(0.299)*	*(0.296)*	*(0.299)*
Black-African	2.003***	2.049***	2.097***	2.113***
	(0.398)	*(0.392)*	*(0.389)*	*(0.401)*
Mixed ethnicity	0.042	0.072	0.064	0.047
	(0.215)	*(0.221)*	*(0.225)*	*(0.229)*
Other	1.168***	1.221***	1.251***	1.290***
	(0.273)	*(0.272)*	*(0.273)*	*(0.278)*
Derived first language - Dummy variables (Base case: English)				
Bilingual	0.561	0.575*	0.557	0.585*
	(0.342)	*(0.350)*	*(0.341)*	*(0.348)*
Other	0.227	0.231	0.210	0.268
	(0.339)	*(0.369)*	*(0.378)*	*(0.362)*

Table 15 (Continued)

	Empirical Estimations			
	(1)	(2)	(3)	(4)
	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS				
Cultural Capital				
Cultural Capital	0.174***	0.178***	0.181***	0.190***
	(0.046)	*(0.048)*	*(0.048)*	*(0.049)*
Habitus				
Academic Self-Perception	0.250***	0.261***	0.304***	0.309***
	(0.051)	*(0.055)*	*(0.056)*	*(0.057)*
Aspirations for Further Study	0.500***	0.516***	0.507***	0.516***
	(0.068)	*(0.065)*	*(0.065)*	*(0.067)*
Social Capital - young person networks				
Outgoing	-0.165***	-0.172***	-0.158***	-0.164***
	(0.045)	*(0.048)*	*(0.048)*	*(0.049)*
Social Participation	-0.028	-0.031	-0.037	-0.040
	(0.043)	*(0.042)*	*(0.042)*	*(0.043)*
Social Capital at home				
Parent-Young Person Connectivity	-0.035	-0.034	-0.025	-0.026
	(0.044)	*(0.044)*	*(0.044)*	*(0.045)*
Parental Aspirations for Young Person	0.297***	0.303***	0.301***	0.307***
	(0.054)	*(0.056)*	*(0.056)*	*(0.056)*
Parent-Young Person Concurrence	0.081*	0.080*	0.081*	0.082*
	(0.041)	*(0.042)*	*(0.042)*	*(0.044)*
Social Capital at school				
Parent-School Connectivity	-0.173***	-0.173***	-0.141***	-0.142***
	(0.044)	*(0.047)*	*(0.046)*	*(0.047)*
Parental Assessment of Schooling	0.185***	0.182***	0.158***	0.159***
	(0.045)	*(0.046)*	*(0.047)*	*(0.048)*
Parental Participation in School Activities	0.020	0.021	0.020	0.019
	(0.050)	*(0.050)*	*(0.049)*	*(0.050)*
Parent Involvement in School Governance	-0.018	-0.021	-0.016	-0.011
	(0.045)	*(0.047)*	*(0.046)*	*(0.046)*
SCHOOL-LEVEL CONTROL VARIABLES				
School sixth form - Dummy variable (Base case: No)				
Yes	-	-	0.132	0.132
	-	-	*(0.105)*	*(0.107)*
Grammar school - Dummy variable (Base case: No)				
Yes	-	-	0.747***	0.753***
	-	-	*(0.258)*	*(0.260)*
Free School Meal percentage				
%	-	-	-0.015***	-0.015***
	-	-	*(0.005)*	*(0.005)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)				
Satisfactory	-	-	-0.237*	-0.258*
	-	-	*(0.130)*	*(0.132)*
Unsatisfactory	-	-	0.154	0.162
	-	-	*(0.228)*	*(0.233)*
Poor/very poor	-	-	-1.089***	-1.101**
	-	-	*(0.419)*	*(0.447)*

Table 15 (Continued)

	Empirical Estimations			
	(1)	(2)	(3)	(4)
	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
RANDOM EFFECTS				
Var(_cons)	-	0.169	0.112	0.106
	-	*(0.067)*	*(0.061)*	*(0.064)*
Var(Literacy Skill)	-	-	-	0.147
	-	-	-	*(0.081)*
Cov(Cons, Literacy Skill)	-	-	-	-0.007
	-	-	-	*(0.047)*

[* p-value < 0.10, ** p-value < 0.05 and *** p-value < 0.01]

Table Notes: Although omitted from the output presented, we also control for domicile region. We omit specific missing categories for familial social status and our single parent household indicator for all models. Complete output tables can be found in Appendix 8.27. Moreover we also compute a table of marginal effects at representative values for our preferred model. This can be found in Appendix 8.28.

Note that the results in Table 15 cannot be viewed as causal. As we do not meet the conditions to establish causality, namely: temporal precedence, covariance of the cause & effect and that no possible alternative explanations exist. Therefore, we recommended the reader interpret our main results as associations rather than 'effects'. Note that the discussions in 3.4.2.2 and 4.4.2.2 are applicable here and provide more detail. It is also important to recognise that our average group size is very small, with approximately 8 observations per school. As there is a question here as to whether this school year sample size provides sufficient variation for meaningful and reliable analysis. For reference, a House of Commons briefing paper suggested that the average size of a secondary school in the UK in 2003 consisted of 922 pupils (HOC, 2004). This is likely to result in low variation and representativeness of HE progression rates within group.

It is also important to point out here that, as we do not control directly for peer effects, this could mediate any observed school effects (as well as Cultural and Social Capital). Some of these characteristics may well share a deterministic relationship with one's peers. Moreover, our random-intercept only model (2) implies that 4.89% of the residual variation in the probability of participation in HE is attributable to unobserved school characteristics[218]. This falls to 3.29% in model 3, where we additional include school-level characteristics, e.g. sixth form, grammar school, percentage of school roll eligible

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[218] The variance partition coefficient is calculated as var(_cons) / (var(_cons) + 3.29). Where the var(_cons) is the random effects parameter derived from our preferred model, namely model 3 estimated using our sample. 3.29 is the relationship between the logit and probit coefficients.

for FSM and Ofsted rating, which suggests that the majority of the variation attributable to school characteristics remains unaccounted for in our model. A full copy of the regression output can be found in the appendix (see Appendix 8.27).

As in 3.4.2.2 and 4.4.2.2 we also contextualise these results by computing the predicted probabilities from our preferred model using a reference case. The margins command in Stata 14 has been updated to facilitate this. In essence Stata computes an average effect, as if children had been randomly assigned to schools. For consistency, our reference case remains largely the same as that which was used in our second empirical chapter, namely: that the young person was born between December 1989 to August 1990, belongs to a dual parent household, household income is equal to £24,700 per annum (median), family's NS-SEC class is lower supervisory & technical occupations, family's highest educational qualification level is 5 A*-C GSCEs, high-medium IMD quartile, resides in the Midlands, is white-British, first language is English and the values for our Key Skill, Cultural Capital, Habitus and contextual Social Capital principal components are fixed at the 50th percentiles. Additionally, we specify that the school has a sixth form, is not a grammar school, 12.6% of the schools' pupil roll is eligible for FSM and the school has been rated as satisfactory by Ofsted. Using this reference case our preferred model predicts that male and female young people have a 22.26% (95% CI: ±8.51ppts) and 26.19% (95% CI: ±7.58ppts) probability of participating in HE respectively. This is somewhat lower than (yet consistent with) the reference probabilities computed in the previous empirical chapter. Recall that these were 25.27% (95% CI: ±6.96ppts) and 29.01% (95% CI: ±7.59ppts) respectively.

Rather than reproduce the full range of total effect changes as per our previous chapters, given their similarity the previous chapter (and models 1 and 2 in Table 15), in the proceeding sections we only illustrate total effects for those associations that we suspect might differ noticeably from our prior findings. For the interested reader, Appendix 8.30 reproduces the full range of illustrations as per the previous empirical chapter for completeness.

5.4.2.3 Individual characteristics

Our results show that the incidence of being male as opposed to female is negatively associated with HE participation, ceteris paribus. Using our reference case and controlling for individual, family background characteristics, Cultural Capital, Habitus, contextual sources of Social Capital, school attended and their characteristics. Our model implies that a young man is less likely to participate by 3.93ppts (15%) compared to a young woman ceteris paribus. Our results also show consistently that being born in the latter three quarters of the academic year has a positive and statistically significant association with HE participation. As such, being born in the 1st quarter of the year is associated with a lower probability of HE participation by 5.25ppts (24%) for young men and 5.92ppts (23%) for young women.

Some of the most notable associations arise from controlling for specific ethnic dummies, e.g. belonging to the Indian subcontinent, black-African or other ethnic group as opposed to being white-British. Belonging to one of these ethnicities is associated with a higher probability of HE participation by 42.66ppts (192%), 46.64ppts (210%) and 26.99ppts (121%) respectively for young men. For females the equivalent increase is 43.43ppts (166%), 47.10ppts (180%) and 28.38ppts (108%). Furthermore, our results indicate that being bilingual exhibits a positive but weak statistical association in models 2 and 4 but not in 3.

5.4.2.4 Family background

We observe significant associations with respect to familial social status and family's highest educational qualification. For instance, for those young people whose family's social status is characterised as either managerial & professional or intermediate, we observe a positive and significant association with HE participation. This amounts to 5.86ppts (26%) and 8.57ppts (39%) for young men and 6.44ppts (25%) and 9.37ppts (36%) for young women respectively. Moreover when we re-estimate the models using our male and female subsamples, this association remains significant for males but becomes insignificant for females. This suggests that the association could be driven by males. Furthermore we also note that the children of those parents who attained some form of HE, whether that be degree or sub-degree, are more likely to participate in HE. This amounts to 18.12ppts (81%) and 7.66ppts (34%) for young men and 19.41ppts (74%) and 8.40ppts (32%) for young women respectively. Moreover when we re-estimate the models by gender, the significance of sub-HE (qualification level above A-Level but below an undergraduate degree) declines for females. On the other hand, our results relating to IMD, reveal that there is an inverse relationship between the level of deprivation and probability of HE participation. For instance, moving from the high-medium to the low-medium quartile of deprivation, appears to increase the probability of HE participation by 6.48ppts (29%) and 7.11ppts (27%) for young men and women respectively. Furthermore, we find no statistically significant association with respect to household income (see the discussion in Section 4.4.2.4 for a comparison of our results to Anders 2012a) and growing up in a single parent household.

5.4.2.5 Key skills principal components - a proxy for cognitive ability

We report that 'Technical Skill' and 'Literacy Skill', which form part of our proxy for cognitive ability, exhibit strong positive associations with HE participation. This is despite that added controls for school, particularly school type (grammar). Thus, our results imply that more able children are more likely to go on to participate in HE regardless of school attended. To contextualise the results, we find that a movement from the 50th to the 75th percentile of our 'Technical Skill' component increases young men's and women's probability by 7.12ppts (32%) and 7.81ppts (30%) respectively. For our 'Literacy Skill' component the equivalent increase is 2.96ppts (13%) for young men and 3.27ppts (12%) for young women.

5.4.2.6 Cultural Capital and Habitus

Our results reveal a positive and statistically significant association between our 'Cultural Capital' component and HE participation. Separately, we also observe that our Habitus components 'Academic Self-Perception' and 'Aspirations for Further Study' exhibit positive associations. We also note that the coefficient associated with the component 'Academic Self-Perception' uncharacteristically increases from 0.261 (model 2) to 0.304 (model 3) and 0.309 (model 4). More generally, we refer the reader to 4.4.2.6 and 4.4.2.7, as the associated discussion of these components in our second empirical chapter seems equally applicable here. We illustrate total effects using our preferred model and reference case across the range of 'Academic Self-Perception' and 'Aspirations for Further Study' in Figure 29[219].

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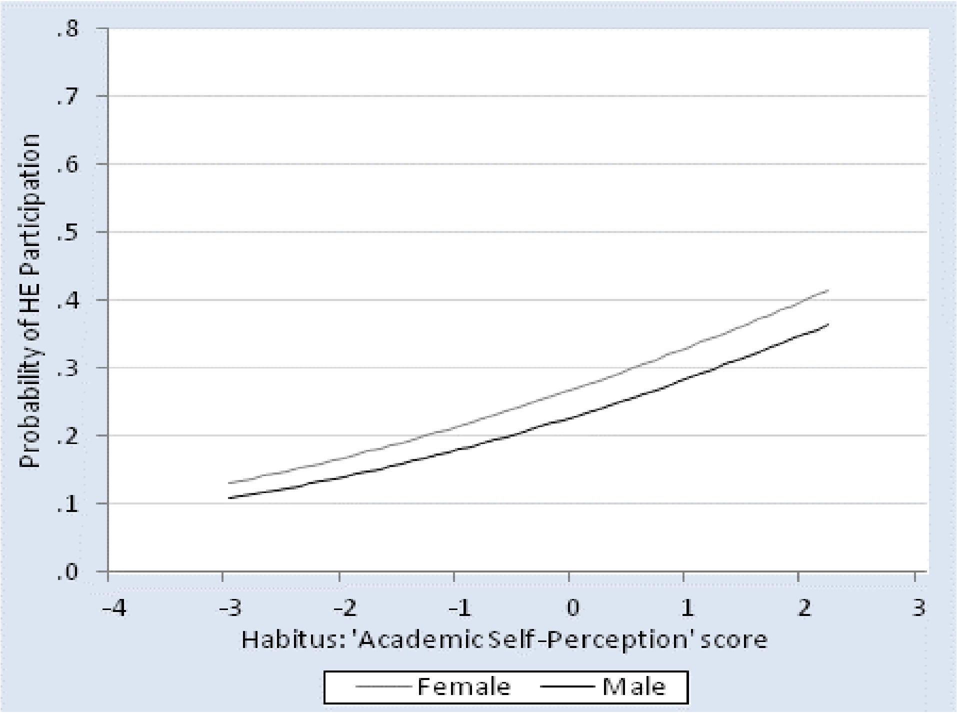
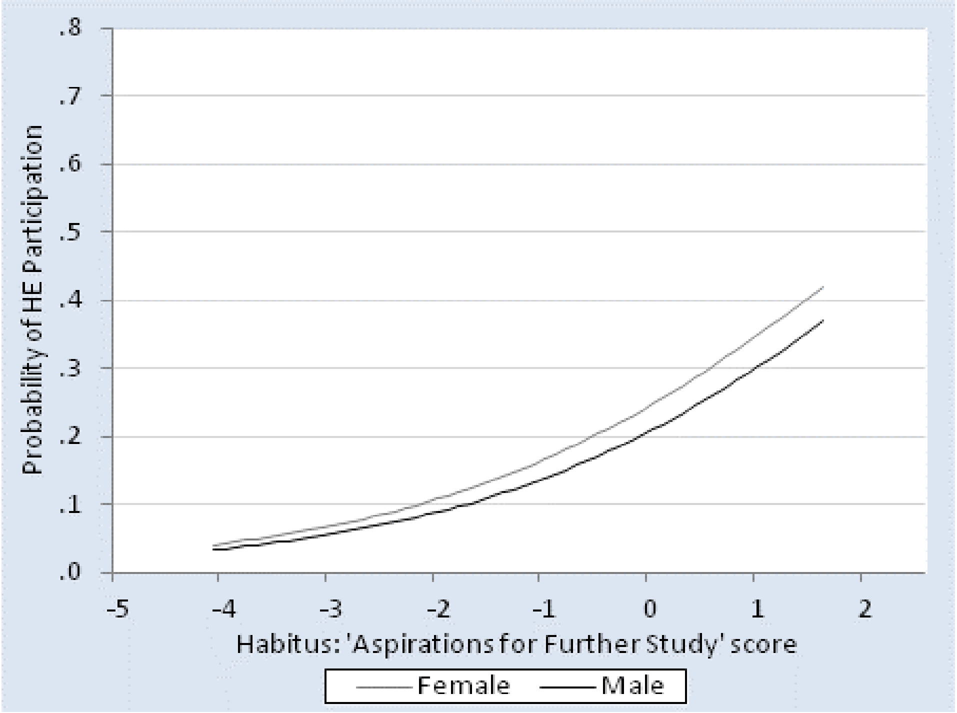
[219] Please note that, as was the case for Figure 18 and 19 in the previous empirical chapter, the resolution may appear a little low for Figures 29 to 33. We again apologise for this but it could not be avoided due to disclosure controls.



[Approx. 'Academic Self-Perception' percentiles:
(10th) -1.43 (25th) --0.89 (50th) -0.13 (75th) 0.55 (90th) 1.23]



[Approx. 'Aspirations for Further Study' percentiles:
(10th) -2.17 (25th) -0.36 (50th) Restricted (75th) 0.83 (90th) Restricted]

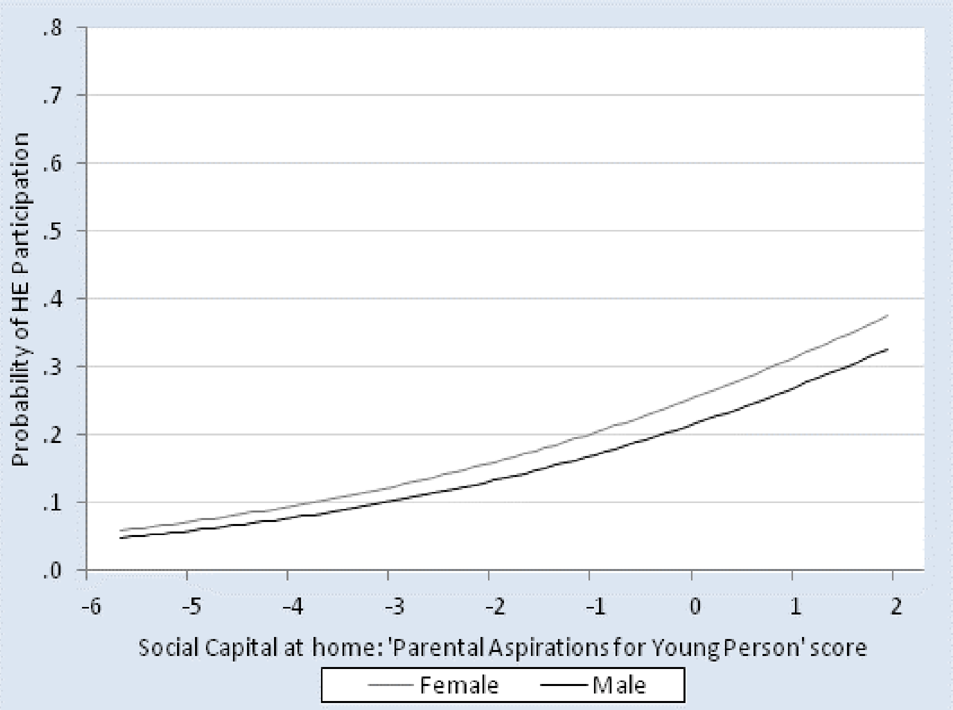
Figure 29: Predicted probability of participation in Higher Education: the role of two Habitus principal components 'Academic Self-Perception' and 'Aspirations for Further Study' using our estimation sample, derived from a sample of the Longitudinal Study of Young People in England 2004

We illustrate these components as we suspect school attended might influence ‘Academic Self-Perception’ and ‘Aspirations for Further Study’. Teachers for instance may have a role in building academic self-perception and motivating students to go on to further study. What is evident from Figure 29, in comparison to Figure 23 (the equivalent diagram in the previous empirical chapter) – although strictly not comparable, is that the prediction lines for ‘Academic Self-Perception’ now start lower and end higher, whilst the trend lines now also bow slightly more toward the x-axis. On the other hand, for the component ‘Aspirations for Further Study’, the prediction lines both start at approximately the same likelihood, the trend lines for this component in Fig 29 are also now less bowed toward the x-axis.

5.4.2.7 Contextual Social Capital

Considering first Social Capital - young person networks, our results reveal that our ‘Outgoing’ component exhibits a negative and strongly statistically significant association with the probability of future HE participation. Moreover, the coefficient associated with our 'Social Participation' component remains insignificant. To contextualise this our model predicts that a movement from the 50th to the 25th percentile of our 'Outgoing' principal component would increase the probability of HE participation for young men and women by 1.93ppts (9%) and 2.14ppts (8%).

For Social Capital at Home, the component ‘Parental Aspirations for Young Person’ exhibits a positive and strongly significant association with HE participation. Moreover, our ‘Parent-Young Person Concurrence’ component exhibits a weak (p-value ≤ 0.10) but positive statistically significant association. This association does, however, appear to be driven by females, as this association become insignificant when re-estimating the model using only young men. Lastly, the component 'Parent-Young Person Connectivity' remains insignificant.

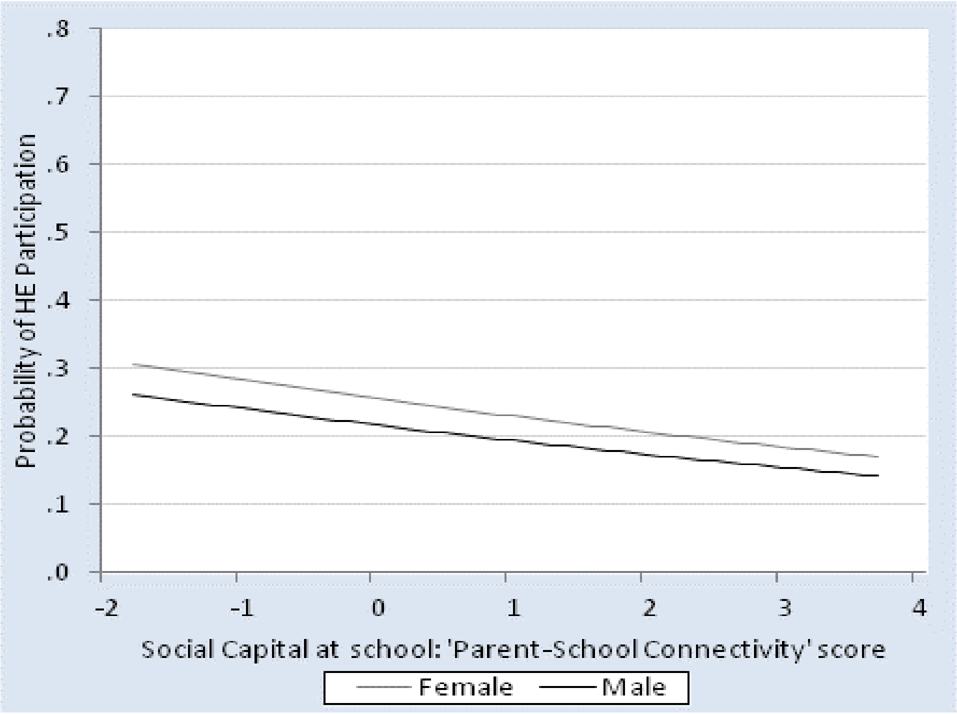


[Approx. 'Parental Aspirations for Young Person' percentiles:
(10th) -1.78 (25th) -0.64 (50th) 0.13 (75th) 0.66 (90th) 0.88]

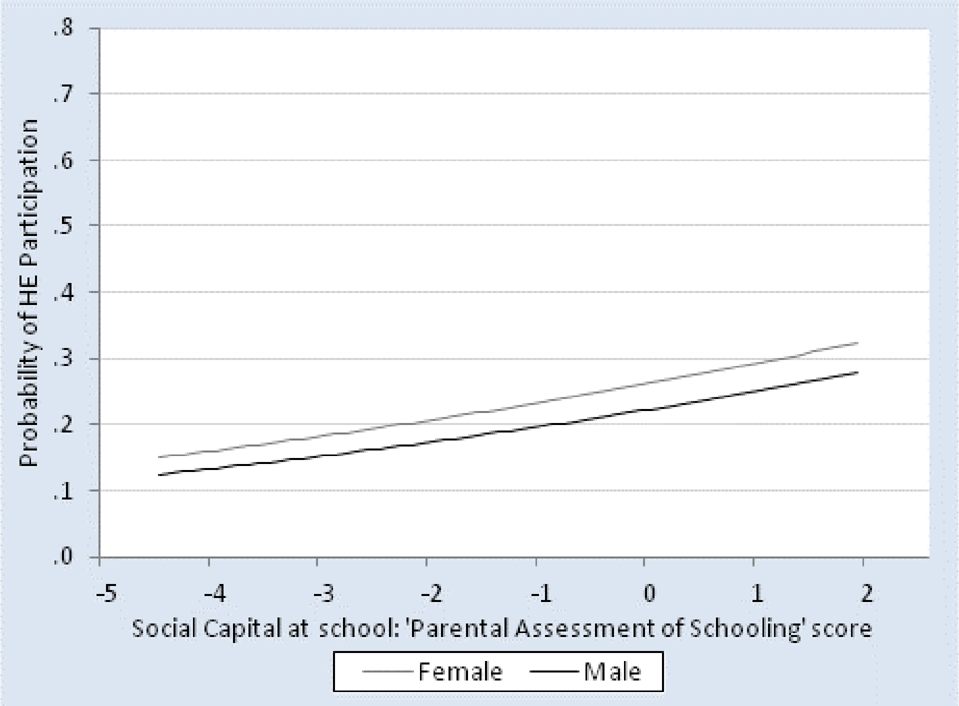
Figure 30: Predicted probability of participation in Higher Education: the role of a Social Capital at home principal component 'Parental Aspirations for Young Person' using our estimation sample, derived from a sample of the Longitudinal Study of Young People in England 2004

We illustrate this component as we suspect school attended might influence ‘Parental Aspirations for Young Person’. Schools might have a roll in encouraging parents to take an interest in their child’s education. What is evident from Figure 30, in comparison to Figure 26 (the equivalent diagram in the previous empirical chapter) – although strictly not comparable, is that the prediction lines for ‘Parental Aspirations for Young Person’ now start and end lower, whilst the trend lines now also bow slightly more toward the x-axis.

For our third source of contextual Social Capital, Social Capital at School, both the components 'Parent-School Connectivity' and 'Parent Assessment of school', exhibit negative and positive statistically significant associations with HE participation, respectively. Importantly, despite controlling for school characteristics, certain elements of Social Capital at school retain their statistically significant associations with HE participation. Nevertheless, we do observe a slight reduction in the magnitude of both coefficients, between models 2 and 3 (and 4) of -0.173 to -0.141 (-0.142) for 'Parent-School Connectivity' and 0.182 to 0.158 (0.159) for 'Parent Assessment of Schooling'. Lastly, given the similarity of our findings, we refer the reader to 4.4.2.8 for a fuller discussion of these reported associations.



[Approx. 'Parent-School Connectivity' percentiles:
(10th) -1.18 (25th) -0.83 (50th) -0.24 (75th) 0.73 (90th) 1.53]



[Approx. 'Parental Assessment of Schooling' percentiles:
(10th) -1.48 (25th) -0.85 (50th) -0.02 (75th) 0.63 (90th) 1.19]

Figure 31: Predicted probability of participation in Higher Education: the role of two Social Capital at school principal components 'Parent-School Connectivity' and 'Parental Assessment of Schooling', derived from a sample of the Longitudinal Study of Young People in England 2004

We illustrate these components as we suspect school attended might influence 'Parent-School Connectivity' and 'Parental Assessment of Schooling'. Schools may exhibit differences in discipline policy or have a discipline problem. Moreover, presumably better schools will also be more likely to receive higher parental assessments. What is evident from Figure 30, in comparison to Figure 28 (the equivalent diagram in the previous empirical chapter) – although strictly not comparable, is that the prediction lines for 'Parent-School Connectivity' now start lower but end about the same point and noting the shallower slope there does not appear to be much of a difference in terms of linearity. On the other hand, for the component 'Parental Assessment of Schooling', the prediction lines both start about the same probability but ends lower, notwithstanding the shallower slope there again doesn't appear to be much difference with respect to linearity.

5.4.2.8 School effects

Having confirmed that the influences of Cultural and Social Capital remain broadly consistent with our earlier findings even after controlling for school characteristics, we now evaluate whether there is a 'good' school effect. Our results show that the sixth form dummy appeared insignificant in all applicable models. Nevertheless, we retain it for two reasons: first, if a school has a sixth form, then students wishing to progress into FE may experience lower cognitive costs, as they may not have to change schools; second, the presence of a sixth form may influence our Habitus principal components, namely: 'Academic Self-Perception' and 'Aspirations for Further Study' components.

Separately, despite controlling for social class and parental education, the coefficient associated with our dummy for grammar school yields a positive and strongly significant association with HE participation. We had expected this given that Burgess et al. (2017) who find a similar association with HE participation (and outcomes), ceteris paribus. Interestingly, this coefficient becomes insignificant when we estimate the model using our female subsample. This may suggest that the association is driven by males. Nevertheless, to place this in context our model predicts that attending a grammar school increases the probability of HE participation by 15.02ppts (67%) for young men and 16.20ppts (62%) for young women.

Furthermore, our results also indicate that attending a school which has been deemed by Ofsted as poor or very poor exhibits a consistent negative association with HE participation. We believe this reflects the fact that schools that are judged to be poor are less inspirational and effective in terms of raising student attainment. We should however point out here that there does not appear to be a significant difference between the excellent/very good/good, satisfactory and unsatisfactory bands. Moreover, we are unable to control for a number of relevant school contextual characteristics and peer effects, some of which may moderate the associations we observe. We illustrate the predicted probabilities of participation for the various Ofsted bands and associated confidence intervals in Figure 32.

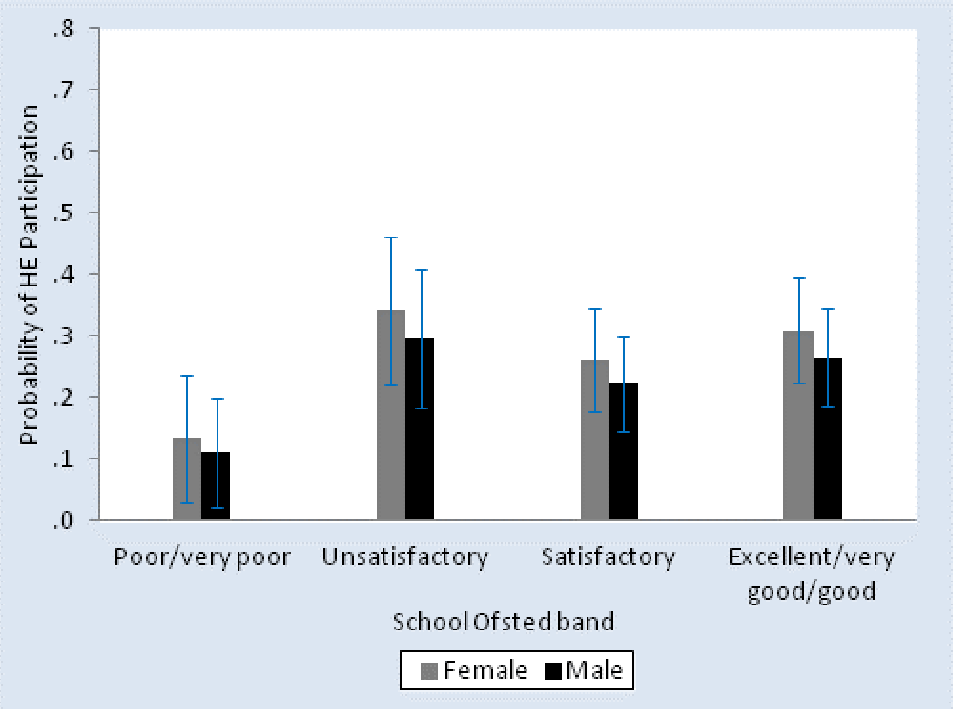
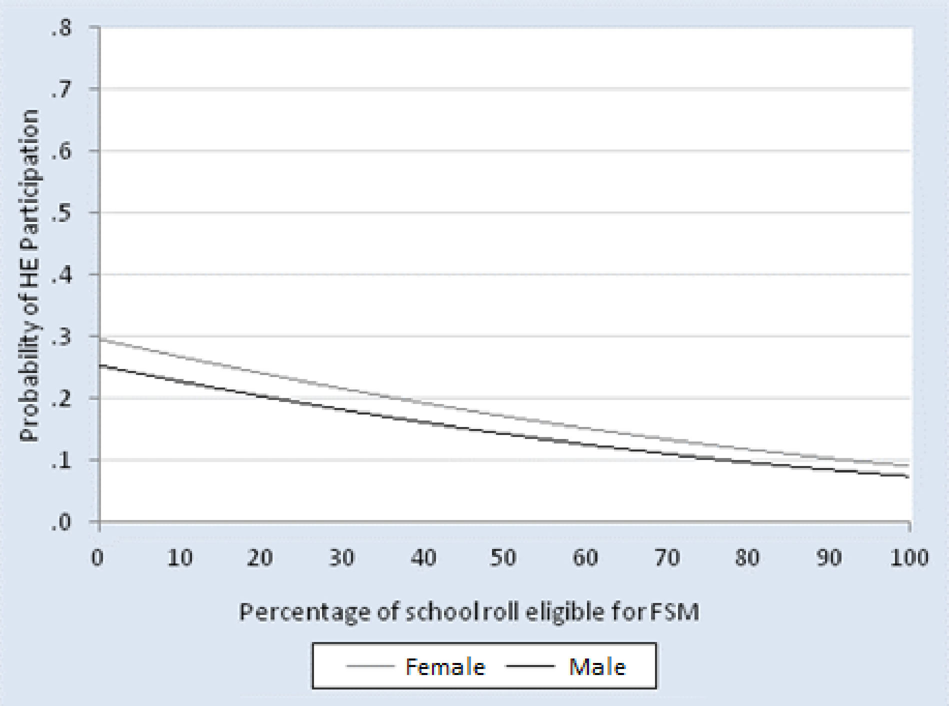


Figure 32: Predicted probability of participation in Higher Education: the impact of the school's awarded Ofsted band using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Our results also imply that the percentage of a school's roll eligible for FSM has a negative and statistically significant association with HE participation. We illustrate the predicted probabilities for percentage of school roll eligible for FSM in Figure 33.



[Approx. percentage of school roll eligible for FSM percentiles:
(10th) Restricted (25th) Restricted (50th) Restricted (75th) Restricted (90th) Restricted]

Figure 33: Predicted probability of participation in Higher Education: the impact of the percentage of school's roll eligible for Free School Meals using our estimation sample, derived from the Longitudinal Study of Young People in England 2004

Our fourth model, although not preferred, included a random coefficient term for 'Literacy Skill'. This was found to significantly improve model fit after conducting a global Wald test. Fitting this random coefficient implies that the between-school variance is a function of 'Literacy Skill'. Moreover, the association exhibited by our key skills component 'Literacy Skill' on the log-odds of HE participation is estimated at 0.280 plus $\hat{u}_{57j}$ with the between-school variance of 'Literacy Skill' estimated at 0.147. As our principal component 'Literacy Skill' is centred on zero, this implies that the intercept variance is $\hat{\sigma}^2_{u0} = 0.106$. This can be interpreted as the between-school variance in the log-odds of HE participation at the mean of 'Literacy Skill'. Furthermore, the negative sign associated with the intercept slope coefficient ($\hat{\sigma}_{u57} = -0.007$) implies that schools with above-average HE participation (intercept residual $\hat{u}_{0j} > 0$) also tend to have below average effects of 'Literacy Skill' (slope residual $\hat{u}_{57j} < 0$). Or, a slightly different interpretation, there is less of a 'Literacy Skill' gradient in schools with high rates of future continuation into HE.

Comparing the coefficients between models 4 and 3 we find that the majority of these remain broadly similar. However, we observe some differences, for instance the participation gap for men is larger (coefficient is more negative, i.e. -0.219 to -0.234). Moreover, we also observe a small positive change in our coefficients for family's highest socioeconomic class and being bilingual (significance has also increased here to p-value ≤ 0.10) suggesting these have all become more important determinants. On the other hand, we also observe stronger negative associations with respect to Ofsted rating bands satisfactory and poor/very poor. We do, however, caution reading too much into to these results as the statistical significance of specifying 'Literacy Skill' as a random coefficient drops out when we restrict the sample by gender.

Recall that we also conducted some further investigations into aspects of our model that could link in with the policy debate. Specifically we estimated a series of additional models using six additional subsamples of young people, i.e. differentiating between those with low or high levels of household income, 'Technical Skill' and 'Literacy Skill' separately. We did this in order to gain an insight on questions such as: to what extent does selective schooling benefit HE participation amongst certain groups? Alternatively, this could also be formulated as: to what extent do poorly performing schools affect progression of students of varying abilities?

Table 16: Weighted multi-level logistic regression output estimating the influences on the probability of participation in Higher Education using low and high household income, 'Technical Skill' and 'Literacy Skill' estimation subsamples, derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Pupils (*n.*)	4,289	2,324	1,965	1,995	2,294	1,954	2,335
Schools (*s.*)	*543*	*529*	*466*	*511*	*499*	*513*	*506*
Constant							
	-1.994*** *(0.286)*	-2.240*** *(0.380)*	-1.730*** *(0.482)*	-2.047*** *(0.432)*	-2.031*** *(0.427)*	-1.971*** *(0.453)*	-2.093*** *(0.423)*
	INDIVIDUAL-LEVEL CONTROL VARIABLES						
Gender - Dummy variable (Base case: Female)							
Male	-0.219** *(0.088)*	-0.150 *(0.128)*	-0.330** *(0.136)*	-0.228 *(0.149)*	-0.268** *(0.129)*	-0.259* *(0.156)*	-0.202* *(0.117)*
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)							
Dec'89 to Aug'90	0.340*** *(0.099)*	0.111 *(0.145)*	0.606*** *(0.147)*	0.418** *(0.171)*	0.312** *(0.139)*	0.393** *(0.175)*	0.347*** *(0.122)*
Single parent household - Dummy variables (Base case: No)							
Yes	-0.066 *(0.128)*	-0.139 *(0.150)*	0.209 *(0.295)*	-0.041 *(0.208)*	-0.095 *(0.168)*	0.054 *(0.222)*	-0.203 *(0.159)*
Household income - Work, benefits and anything else for main parent and second parent							
£s per annum	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*	0.000 *(0.000)*

Table 16 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)							
Managerial & professional	0.368**	0.519**	0.090	0.215	0.524**	0.232	0.566**
	(0.187)	*(0.242)*	*(0.278)*	*(0.279)*	*(0.266)*	*(0.291)*	*(0.264)*
Intermediate	0.502**	0.533*	0.471	0.296	0.742**	0.271	0.740**
	(0.225)	*(0.277)*	*(0.375)*	*(0.301)*	*(0.329)*	*(0.375)*	*(0.311)*
Small employers & own account workers	0.286	0.416*	0.090	0.054	0.488	-0.001	0.597**
	(0.200)	*(0.251)*	*(0.316)*	*(0.290)*	*(0.297)*	*(0.308)*	*(0.291)*
Lower supervisory & technical occupations	0.049	0.331	-0.370	-0.173	0.256	-0.008	0.084
	(0.212)	*(0.246)*	*(0.352)*	*(0.304)*	*(0.312)*	*(0.310)*	*(0.294)*
Semi-routine	0.187	0.335	-0.149	0.086	0.372	-0.151	0.461
	(0.218)	*(0.256)*	*(0.404)*	*(0.302)*	*(0.334)*	*(0.349)*	*(0.299)*
Unemployed	0.306	0.265	0.072	0.157	0.526	0.391	0.150
	(0.348)	*(0.378)*	*(0.657)*	*(0.449)*	*(0.537*	*(0.475*	*(0.472)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)							
HE undergraduate degree or higher	0.881***	1.031***	0.939***	0.584**	1.146***	1.205***	0.714***
	(0.148)	*(0.234)*	*(0.203)*	*(0.240)*	*(0.199)*	*(0.228)*	*(0.189)*
Lesser HE	0.408***	0.303	0.580***	0.351	0.474**	0.847***	0.103
	(0.134)	*(0.193)*	*(0.198)*	*(0.214)*	*(0.184)*	*(0.223)*	*(0.167)*
A-Level	0.092	-0.138	0.368*	0.037	0.190	0.363*	-0.030
	(0.130)	*(0.177)*	*(0.198)*	*(0.193)*	*(0.176)*	*(0.204)*	*(0.167)*
Other	-0.381	-0.379	-0.312	-0.420	-0.513	0.105	-0.841*
	(0.348)	*(0.389)*	*(0.568)*	*(0.443)*	*(0.474)*	*(0.542)*	*(0.452)*
Level 1	-0.245	-0.051	-0.948*	-0.672**	0.246	-0.443	-0.057
	(0.229)	*(0.259)*	*(0.523)*	*(0.322)*	*(0.351)*	*(0.398)*	*(0.305)*
None	-0.118	-0.009	-0.533	-0.368	0.226	0.074	-0.135
	(0.199)	*(0.222)*	*(0.512)*	*(0.252)*	*(0.351)*	*(0.288)*	*(0.293)*

Table 16 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Index of Multiple Deprivation 4 Quantiles (Base case: Quantile 4)							
High-medium	0.092	0.082	0.026	0.110	0.121	0.122	0.092
	(0.134)	*(0.168)*	*(0.248)*	*(0.196)*	*(0.204)*	*(0.207)*	*(0.185)*
Low-medium	0.442***	0.674***	0.171	0.591**	0.366*	0.561**	0.332*
	(0.154)	*(0.212)*	*(0.245)*	*(0.235)*	*(0.212)*	*(0.264)*	*(0.195)*
Low	0.620***	0.724***	0.440*	0.720***	0.583***	0.572**	0.661***
	(0.160)	*(0.208)*	*(0.266)*	*(0.235)*	*(0.222)*	*(0.246)*	*(0.215)*
Key Skills							
Technical Skill	0.563***	0.535***	0.613***	0.558***	0.407**	0.631***	0.484***
	(0.061)	*(0.077)*	*(0.099)*	*(0.116)*	*(0.161)*	*(0.096)*	*(0.087)*
Gifted and Talented	0.040	0.073	0.022	0.255	0.021	0.232	-0.016
	(0.054)	*(0.079)*	*(0.073)*	*(0.233)*	*(0.060)*	*(0.151)*	*(0.057)*
Literacy Skill	0.255***	0.360***	0.121	0.363***	0.160**	0.307**	0.254**
	(0.057)	*(0.076)*	*(0.089)*	*(0.086)*	*(0.080)*	*(0.131)*	*(0.108)*
Ethnic group - Dummy variables (Base case: White-British)							
Indian subcontinent	1.913***	1.902***	2.073***	1.930***	2.088***	2.012***	2.024***
	(0.187)	*(0.223)*	*(0.374)*	*(0.246)*	*(0.364)*	*(0.313)*	*(0.257)*
Black-Caribbean	0.255	0.504	-0.053	0.151	0.380	0.389	0.198
	(0.296)	*(0.343)*	*(0.454)*	*(0.384)*	*(0.472)*	*(0.467)*	*(0.369)*
Black-African	2.097***	2.230***	1.504*	2.467***	0.924*	3.276***	1.274**
	(0.389)	*(0.462)*	*(0.806)*	*(0.443)*	*(0.546)*	*(0.562)*	*(0.501)*
Mixed ethnicity	0.064	0.374	-0.250	0.092	0.048	-0.186	0.168
	(0.225)	*(0.296)*	*(0.335)*	*(0.331)*	*(0.372)*	*(0.339)*	*(0.331)*
Other	1.251***	1.533***	0.789*	1.262***	1.145***	0.994**	1.782***
	(0.273)	*(0.331)*	*(0.420)*	*(0.359)*	*(0.374)*	*(0.394)*	*(0.376)*

Table 16 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Derived first language - Dummy variables (Base case: English)							
Bilingual	0.557	0.118	2.170***	0.366	1.566**	0.721*	-0.061
	(0.341)	*(0.468)*	*(0.832)*	*(0.415)*	*(0.660)*	*(0.434)*	*(0.460)*
Other	0.210	0.129	0.485	0.198	0.356	0.092	0.495
	(0.378)	*(0.439)*	*(0.717)*	*(0.431)*	*(0.579)*	*(0.536)*	*(0.585)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS							
Cultural Capital							
Cultural Capital	0.181***	0.139**	0.224***	0.150*	0.207***	0.147*	0.240***
	(0.048)	*(0.064)*	*(0.069)*	*(0.080)*	*(0.065)*	*(0.080)*	*(0.062)*
Habitus							
Academic Self-Perception	0.304***	0.362***	0.284***	0.143*	0.444***	0.349***	0.306***
	(0.056)	*(0.074)*	*(0.082)*	*(0.081)*	*(0.074)*	*(0.087)*	*(0.074)*
Aspirations for Further Study	0.507***	0.478***	0.575***	0.478***	0.558***	0.508***	0.517***
	(0.065)	*(0.091)*	*(0.098)*	*(0.087)*	*(0.105)*	*(0.098)*	*(0.087)*
Social Capital - young person networks							
Outgoing	-0.158***	-0.138**	-0.169**	-0.156**	-0.182***	-0.144**	-0.200***
	(0.048)	*(0.066)*	*(0.070)*	*(0.067)*	*(0.067)*	*(0.072)*	*(0.065)*
Social Participation	-0.037	-0.068	-0.006	0.011	-0.085	-0.052	-0.024
	(0.042)	*(0.059)*	*(0.070)*	*(0.075)*	*(0.054)*	*(0.070)*	*(0.061)*
Social Capital at home							
Parent-Young Person Connectivity	-0.025	0.049	-0.109*	0.025	-0.045	-0.109	0.041
	(0.044)	*(0.063)*	*(0.062)*	*(0.073)*	*(0.059)*	*(0.074)*	*(0.059)*
Parental Aspirations for Young Person	0.301***	0.205***	0.423***	0.310***	0.304***	0.233***	0.367***
	(0.056)	*(0.071)*	*(0.082)*	*(0.076)*	*(0.085)*	*(0.084)*	*(0.077)*
Parent-Young Person Concurrence	0.081*	0.111**	0.046	0.089	0.079	0.179***	0.031
	(0.042)	*(0.056)*	*(0.072)*	*(0.070)*	*(0.055)*	*(0.059)*	*(0.056)*

Table 16 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital at school							
Parent-School Connectivity	-0.141***	-0.170***	-0.117	-0.068	-0.197***	-0.151**	-0.167***
	(0.046)	*(0.062)*	*(0.075)*	*(0.067)*	*(0.065)*	*(0.070)*	*(0.063)*
Parental Assessment of Schooling	0.158***	0.126**	0.197***	0.219***	0.112*	0.238***	0.086
	(0.047)	*(0.061)*	*(0.074)*	*(0.067)*	*(0.066)*	*(0.071)*	*(0.065)*
Parental Participation in School Activities	0.020	0.082	-0.034	0.111*	-0.058	0.025	-0.004
	(0.049)	*(0.073)*	*(0.064)*	*(0.057)*	*(0.060)*	*(0.077)*	*(0.063)*
Parent Involvement in School Governance	-0.016	-0.084	0.014	0.043	-0.046	-0.002	-0.035
	(0.046)	*(0.081)*	*(0.055)*	*(0.089)*	*(0.053)*	*(0.072)*	*(0.066)*
SCHOOL-LEVEL CONTROL VARIABLES							
Sixth form - Dummy variable (Base case: No)							
Yes	0.132	0.133	0.083	0.174	0.123	0.330**	-0.030
	(0.105)	*(0.133)*	*(0.154)*	*(0.153)*	*(0.146)*	*(0.164)*	*(0.136)*
Grammar school - Dummy variable (Base case: No)							
Yes	0.747***	1.398***	0.564**	2.445*	0.810***	0.063	1.052***
	(0.258)	*(0.443)*	*(0.284)*	*(1.355)*	*(0.269)*	*(0.496)*	*(0.269)*
Free School Meal percentage							
%	-0.015***	-0.015**	-0.014	-0.007	-0.022***	-0.015**	-0.017**
	(0.005)	*(0.006)*	*(0.010)*	*(0.007)*	*(0.007)*	*(0.008)*	*(0.007)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)							
Satisfactory	-0.237*	-0.371**	-0.060	-0.247	-0.234	-0.326	-0.236
	(0.130)	*(0.162)*	*(0.191)*	*(0.202)*	*(0.181)*	*(0.227)*	*(0.159)*
Unsatisfactory	0.154	0.004	0.395	0.253	0.037	0.156	0.090
	(0.228)	*(0.205)*	*(0.375)*	*(0.248)*	*(0.388)*	*(0.274)*	*(0.300)*
Poor/very poor	-1.089***	-1.103**	-1.218*	-1.293**	-0.815	-2.271***	-0.176
	(0.419)	*(0.455)*	*(0.651)*	*(0.559)*	*(0.595)*	*(0.501)*	*(0.599)*

Table 16 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
RANDOM EFFECTS							
Var(cons)	0.112 *(0.061)*	0.000 *(0.000)*	0.188 *(0.126)*	0.080 *(0.156)*	0.256 *(0.122)*	0.247 *(0.150)*	0.091 *(0.083)*

[* p-value < 0.10, ** p-value < 0.05 and *** p-value < 0.01]

The results using our low/high household income, ‘Technical Skill’ and ‘Literacy Skill’ groups reveal that being male only exhibits a statistically significant association with HE participation (p-value ≤ 0.05) for the high income and high ‘Technical Skill’ group. This result appears to contrast somewhat with the prevailing literature which assumes that males in low income and/or ability groups are disadvantaged in terms of HE participation. Turning now to family’s highest socioeconomic status, we observe some statistically significant associations namely from the managerial & professional and intermediate categories for the low income, high ‘Technical Skill’ and ‘Literacy Skill’ groups. Nevertheless, it would also appear that parental education has a more important influence for young people who are in the high ‘Technical Skill’ or low ‘Literacy Skill’ groups. In the former case this might be construed as evidence indicating complementary, whereas in the latter compensating effects. Nevertheless, we do observe the added statistical significance of the lesser HE, A-Level and Level 1 categories with respect to HE participation for the higher income group.

Our proxies for cognitive ability, namely our Key Skill principal components ‘Technical Skill’ and ‘Literacy Skill’, on the other hand, appear to exhibit similar associations across the groups. However, ‘Literacy Skill’ is not statistically significant for the high income group. This last result is important as being more literate on average appears to bolster a young person’s, from a lower income background, chances of participating in HE. Moreover, we also observe some differences with respect to ethnicity but do not elaborate further. As sample sizes within each band are likely very small and so these differences could plausibly be driven by outliers. Lastly, the incidence of being bilingual only appears to exhibit a statistically significant association, with HE participation, for the high income and ‘Technical Skill’ groups, although it does appear weakly significant for the low ‘Literacy Skill’ group.

Of more direct interest to this study is the influence of Cultural Capital, Habitus and contextual Social Capital components between the various low and high groups. Cultural Capital for instance appears to exhibit a stronger positive and statistically significant association for the high income, ‘Technical Skill’ and ‘Literacy Skill’ subsamples. Habitus exhibits a fairly similar association across groups. Although we do note a reduction in significance of the component ‘Academic Self-Perception’ for the low ‘Technical Skill’ group. For Social Capital – young person networks, the component ‘Outgoing’ is relatively consistent across groups. It is however noticeable that the negative coefficients are somewhat larger for the high income, ‘Technical Skill’ and

‘Literacy Skill’ (particularly) groups. For Social Capital at home the component ‘Parental aspirations for Young Person’ exerts a larger impact on the higher income group, although the association is relatively consistent across the other groups (with the possible exception of the low versus high ‘Literacy Skill’). On the other hand, the positive association from our ‘Parent-Young Person Concurrence’ component is only statistically significant for the low- income and ‘Literacy Skill’ group. Thus it would appear that parental aspirations matter more for those young people originating from higher income backgrounds, whereas parent-child relations matter more for those in the bottom of the ‘Literacy Skill’ distribution. For Social Capital at school, the component ‘Parental Assessment of Schooling’ tends to exert a larger positive association for the high income, low ‘Technical Skill’ and ‘Literacy Skill’ groups. Thus, HE participation appears to be more sensitive to whether parents think the school is good for the high income and low Key Skill groups. More generally, these findings indicate that there is evidence that the associations exhibited by these different types of capital varies between groups. Hence, it is not just that these different types of capital matter, but that their impact is sensitive to where young people are in the income and skills distributions.

Table 16 shows, with respect to our school-level characteristics, that the presence of a sixth form only appears to matter empirically for the low ‘Literacy Skill’ group. This might be construed as further evidence of compensating effects. On the other hand, the coefficient for grammar school is almost twice as big for the low income group as opposed to the high income group. This is interesting because although income was not statistically significant in the model attending a good school clearly matters to a young person from a low income family with respect to their likelihood of future HE participation. Lastly, Ofsted rating appears to be of higher importance for the low income subsample, as the coefficients for satisfactory and poor/very poor are both statistically significant at 0.05 level. Nevertheless, we also observe some statistical significance of the coefficient for this latter Ofsted band with respect to the low ‘Technical Skill’ and low ‘Literacy Skill’ groups. This suggests that attending a bad school for students originating from low income background or have lower relative rankings in either ‘Technical Skill’ or ‘Literacy Skill’ is negatively associated with HE participation.

5.4.2.9 Summary

What is apparent from results is that despite the switch from a single to multi-level framework, the reported Cultural and Social Capital associations with HE participation remain largely unchanged. This is a particularly interesting finding. As one might argue that our reported associations arising from Habitus, Social Capital at home and at school might be attenuated once school attended (and their characteristics) is accounted for. Recall that at the beginning of this chapter, we posed the question: Is there a 'good school' effect? The results indicate that attending a grammar school does exhibit a positive and statistically significant association with HE. Our model implies that this increases a young man's and woman's probability of participation by 67% and 62% respectively. We speculate that this may be a consequence of a combination of factors, such as: more homogenous abilities within a class making it easier to teach; better behaviour; higher individual and family intrinsic values of education on average; and increased parental involvement. Our results also imply lower HE participation rates for those attending schools with a higher proportion of peers from less well-off backgrounds, defined by the percentage of pupils eligible for FSM on a school's roll. Similarly, attending schools rated by Ofsted as excellent/very good/good appears to be associated with a higher probability of participating in HE compared to those rated as poor/very poor. Moreover, estimations using the various subgroups for low or high income or ability identified that the impact of Cultural Capital, Habitus and contextual Social Capital is sensitive to where young people are in the income and skills distributions.

5.5 Conclusion

This chapter sought to delve deeper into the 'black box' that is a child's school. Given that the literature contains evidence that suggests a strong empirical link between education and later labour market success. This research complements our previous chapters by extending our empirical framework to control for school attended. Specifically, we began this chapter by reviewing a selection of recent contributions to the school and peer effect literatures. Aside from demonstrating school attended likely matters, our review of the peer effects literature highlighted this as a credible alternative source of influence (as opposed to our capital measures and school effects) which might affect HE participation.

We show that, depending on school attended, schools do appear to be associated with student trajectories into HE. Specifically, we show that specific characteristics such as whether they have selective admission, i.e. grammar schools, percentage of school roll eligible for FSM and specific Ofsted inspection rating bands; exhibit statistically significant associations with HE participation. Our findings here appear broadly consistent with the school effects literature. For instance, Burgess et al. (2017) find that attending a grammar school ceteris paribus boosts an individual’s likelihood of HE participation. On the other hand, our finding that Ofsted band exhibits significant associations with HE participation may reflect higher teaching standards which Slater et al. (2012) reports bolsters GCSE performance. More generally, our results continue to show that our measures of Cultural, Social Capital and Habitus are significantly associated with HE participation. This is despite the fact that we introduced a multi-level framework to account more fully for the role of school on future HE participation. As such we believe our findings complement our earlier findings, whilst also contributing to the debate concerning the effectiveness of schools.

6. CONCLUSIONS AND FURTHER RESEARCH

We began this thesis by establishing that youth participation rates in HE have increased since the 1960s. Specifically, API figures indicated that only 5% of the population participated in the 1960/61 academic year, whereas current HEIPR statistics reveal that this has increased to 42% in 2015/16. The increase in HE participation over time has not been linear, with several periods of rapid increase and others of relative stability. As one might expect, these roughly coincide with changes in educational policy. There have also, inevitably, been changes in the way HE has been financed. The UK system has switched from being elitist to mass participation, where students are required to pay tuition fees and fund their own living expenses as opposed to receiving bursaries and grants.

To establish how cultural and social influences might affect HE participation, we first framed the HE participation decision as a cost-benefit analysis. Here we drew particular attention to the influence of individual and family background characteristics by reviewing some evidence published in the 2000s. For instance, we know from the UK HE participation literature that academic ability is the most important determinant of whether or not a young person participates in HE, followed by family background characteristics (particularly income and social class) although cognitive ability has been found to be declining in relative influence (see Blanden & Gregg, 2004; Blanden & Machin; 2005, Galindo-Rueda et al., 2004; Galindo-Rueda & Vignoles, 2005). This raised concerns about how evenly opportunities to participate in HE are being taken up across different socioeconomic groups.

We then considered the question: given expansion in HE, does it still pay to participate? The evidence suggests that returns have remained stable (Green & Zhu, 2010; Walker & Zhu, 2008) despite a higher proportion of young people participating in HE. To illustrate, we noted that the OECD (2017) calculated that, on average, across OECD member countries with data, the net private financial returns of attaining tertiary education amounts to US $252,100 for a man and $167,400 for a woman. However, the widening of differences in returns, both within and between subjects, is of growing policy concern. Particularly so as there appears to be a disparity, not only in terms of numbers, but also in the types of courses undertaken and institutions attended by individuals from different social backgrounds (Chowdry et al., 2013). Nevertheless, we concluded that investing in HE remains a good personal investment.

The HE participation literature also suggests, that financial interventions to widen participation, e.g. tuition fee bursaries and non-repayable grants covering living expenses, do not appear particularly effective in comparison to other types of intervention (Chilosi et al., 2010). Some of these interventions, e.g. outreach activities, may be influencing an individual's perception of what university is, who it is for and an individual's sense of self. However the UK HE literature has focused largely on individual and family background characteristics, leaving cultural and social influences under-explored. A small number of mostly US-based studies provide evidence that Cultural and Social Capital are associated with a range of youth outcomes, including education. Moreover, only recently has research effort been directed at exploring whether this is the case in a British context, e.g. an ESRC funded project 'Cultural Capital and Social Exclusion: a critical investigation between 2003 and 2005'.

We subsequently introduced and explored the concepts of Cultural and Social Capital, tracing out their origins and evolution and how they may influence HE participation. Arguing, for instance, that parents are likely influential in their child's development - through helping to shape their attitudes and behaviours whilst also influencing their perception of education, their aims and aspirations for future study. Additionally, it is also reasonable to assume that a young person's social life, particularly during childhood and early adolescence, will be shaped by their parents. In the literature reviews that accompanied each of our first two empirical chapters, we discussed a number of contributions to the various Cultural Capital, Habitus and Social Capital literatures. These indicated that these capitals are significantly associated with a range of educational and youth outcomes. Moreover, we also explain in detail how these concepts have been operationalised within these studies, which we use to inform our own empirical strategy.

In this thesis we set out to explore the extent to which measures of Cultural and Social Capital were associated with HE participation in the UK by conducting three pieces of empirical research. The first set out to explore whether rudimentary operationalisations are associated with HE participation using two well researched British birth cohorts, namely National Child Development Study 1958 (NCDS) and British Cohort Study 1970 (BCS70). Moreover, this chapter also served as a useful point of comparison to the literature, helping to bridge the HE participation and sociological literatures. In terms of operationalising our measures of Cultural and Social Capital, we conducted PCA on a set of indicator variables. The specific indicators we used to operationalise Cultural Capital related to parental outings and reading habits. To operationalise Social Capital, we used indicator variables which related to how a cohort member spends their leisure time. The extracted principal components were then added to a logistic model which included a measure of cognitive ability, other individual and family background characteristics to predict HE participation by age 33 for the NCDS and age 34 for the BCS70.

Our results confirmed the primary importance of cognitive ability in determining HE participation. More importantly we showed that elements of our Cultural Capital measures, namely 'Interest in Literature' for the NCDS and 'Cultural Participation' for the BCS70 components, had a positive and significant association with future HE participation. On the other hand, the component 'Engagement in Media' was shown to exhibit a negative and significant association for the NCDS. Our results also revealed that the Social Capital components 'Social Participation' for the NCDS and 'Outgoing' for the BCS70, exhibited negative and statistically significant associations with HE participation.

Having established that these measures of Cultural and Social Capital are significantly associated with HE participation for two well-researched British Birth Cohort studies, our second study made two further contributions. First, we investigated to what extent individual, family background, Cultural and Social Capital were associated with HE participation for a more recent cohort of young persons. Our sample here was derived from the Longitudinal Study of Young People in England 2004 (LSYPE), who were born between 1989 and 1990. Second, the richness of the data enabled us to expand our operationalisations by including additional measures of Habitus and two further contextual measures of Social Capital, namely Social Capital at home and at school. The former is particularly important because Gaddis (2013) finds that the inclusion of Habitus completely mediates the reported Cultural Capital associations.

We operationalised our measure of Cultural Capital by employing PCA on indicators relating to leisure activities and rehearsing with a musical instrument. For Social Capital - young person networks, we used indicators relating to participation in sport, extracurricular activities and local neighbourhood-based peer interactions. For Habitus these variables related to intentions for FE, HE, self- and teacher-perceptions of their subject-specific ability. For Social Capital at home we used variables related to parents' aspirations for the young person, parental supervision, parent-child communication and relationship. Furthermore, for Social Capital at school we used variables related to teacher supervision, teacher responsiveness to a learner's needs, parent engagement with their child's schooling, parent involvement with school activities and parental satisfaction with school.

The results from this second empirical chapter indicated that our model, which included additional measures of Habitus and contextual Social Capital (in addition to measures of Cultural Capital and Social Capital – Young Person's Networks), improved goodness-of-fit; in comparison to models which only included individual and family background characteristics. Moreover, the components 'Cultural Capital' (Cultural Capital), 'Academic Self-Perception' (Habitus), 'Aspirations for Further Study' (Habitus), 'Parental Aspirations for Young Person' (Social Capital at Home) and 'Parental Assessment of Schooling' (Social Capital at school) were all found to have positive and statistically significant associations. The components 'Outgoing' (Social Capital – young person networks) and 'Parent-School Connectivity' (Social Capital at school), on the other hand, were all found to exhibit negative and statistically significant associations. The latter initially appeared surprising, but we suspect that frequent school-parent communication will likely concern behavioural issues for the most part.

Our third empirical investigation, which again utilised the more recent data, built on these findings to explore the impact of secondary school attended and whether this exhibits a largely independent effect. We are interested in the type of school attended as it is widely regarded as an important determinant of educational attainment. Indeed, attending a 'good' school may not only result in a higher accumulation of Human Capital per year of schooling, but may influence, along with parents, a young person's attitudes, behaviours and aspirations. Specifically, we were interested in answering questions like: how big an influence can a good school have? What specifically is it about a good school that is driving this association? How will controlling for school attended affect our reported Cultural Capital, Habitus and contextual Social Capital associations? To investigate these issues, we built on the model estimated in our second empirical chapter by applying a multi-level framework. This allowed us to include a separate random intercept for each school attended as well as a vector of school-level characteristics. It also allowed us to trial a number of cross-level interactions, additional random coefficients and levels.

Our results from this analysis indicate that type of school attended not only significantly improved model fit but exhibited largely independent associations with the likelihood of future HE participation; albeit of lesser importance than individual, background characteristics, cultural and social influences. Specifically, our results imply that HE participation rates are higher for those attending a grammar school. On the other hand, HE participation rates are lower in schools where there is a higher percentage of students eligible for FSM and those receiving an Ofsted rating of poor/very poor. Perhaps more significantly, the addition of school characteristics does not appear to change our earlier findings; in that our measures of Cultural Capital, Habitus and contextual Social Capital continue to exhibit similar associations.

To summarise, this thesis has presented evidence which suggests that, in addition to academic ability and family background characteristics, measures of Cultural and Social Capital all exhibit significant associations with the likelihood of future HE participation. These influences remain even after controlling for school attended. In the remainder of this section we discuss the main policy implications of this work and issues that should be investigated in future research. For instance, although we do not establish a causal link, we complement the existing literature with respect to understanding the influences affecting HE participation. We also suggest some ways in which existing policy initiatives, should a causal link be established, could be adapted to bolster an individual's Cultural and Social Capital. This is important because such changes are necessary to ensure the UK educational system and its' workforce remain internationally competitive. Nevertheless, we caution here that a strict evidence-based approach should be adopted and used as a guide to see what works before any of these policy suggestions are rolled out nationally. This evidence-based approach could, for instance, borrow from experimental design whereby initiatives are first trailed (either randomised or perhaps in a similar manner to the EMA) and compared to a base case. Moreover, outreach initiatives in universities have become significantly better resourced due to 2012 changes in tuition fee income[220]. As such, this may represent an increasingly important source of funding for research into this promising area.

In terms of future research, we do recognise that our measures are imperfect, by lacking more specific indicators of cultural knowledge, participation and school characteristics.

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[220] UUK (2013) p.8 states that £431.4 million (23% of fee income) was spent on access and outreach in 2011-12, whereas universities predicted in 2014-15 this would rise to £673.4 million (27% of fee income).

Moreover, we are not able to accurately map social networks or perceptions of local neighbourhood, primarily due to data limitations. Also we can only show an association, rather than causal effect and can only suggest based on our reasoning what (if any) the underlying mechanism might be. As such, we envisage that future research in this area should seek to conduct a mixed method primary survey[221], perhaps taking inspiration from Noble & Davies (2009). This would enable the capital concepts to be operationalised more fully and enable the underlying mechanisms to be more thoroughly explored. An alternative approach could be to conduct confirmatory (rather than exploratory) analysis by making use of SEM (as do Dufur et al., 2013a; 2013b). Alternatively, another interesting option might be to utilise a natural experiment, such as the 2012 fee reforms in England, given that universities became more accountable for WP via access agreements. We also concede that factors such as non-cognitive traits, personality, parenting and peer effects, may be biasing our reported associations. Nevertheless, whether the results relate specifically to Cultural and Social Capital, should be more thoroughly explored as they reveal the importance of tastes, aspirations, the home environment and school attended. Moreover, the new LSYPE2 cohort (which began in 2013 and will track a new cohort of children aged between 13 and 14) and the MCS (whose cohort members will soon be old enough to participate in HE) could offer additional insights, particularly given the recent rise in tuition fees, withdrawal of bursaries and grants for disadvantaged pupils[222] and the changing nature of UK HE. More generally, this thesis also does not touch on dropout, HE attainment, destinations[223]

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[221] We believe the DfES multiyear Social and Emotional Aspects of Learning programme is relevant here. This is a secondary school-based (year 7 were the target cohort initiative that was designed to bolster five domains of Goleman (1995) emotional intelligence, these are: self-awareness, self-regulation, motivation, empathy and social skills. It employs a mixed method approach, with schools encouraged to employ different approaches to implementation in order to internalize ownership. The findings suggest that the intervention had a small causal effect in primary schools but no effect in secondary schools. In the latter case, this is not consistent with the literature with the authors suggested successful programs: high level of structure and consistency in program delivery (SAFE principles – Sequenced, Active, Focused, and Explicit); continuously monitored to ensure compliance; and receive appropriate resources (human, financial, etc.).

[222] We must however recognise that universities (particularly less prestigious institutions) have put a great deal of effort into attracting and support the best students from diverse social and cultural backgrounds. For instance, most now offer an alternative offer programme that may either allow students who do not make the grade to first undertake a foundation year and/or participate in a programme during the A-Levels to obtain a slight grade reduction (AAA to AAB for instance). The University of Bristol's efforts are particularly notable in this area, with respect to their trial Foundation Year in Arts and Humanities (see McLellan et al., 2016). Moreover, the University of Bath introduced a new Gold Scholarship in 2017-18 academic year. The latter is designed to give disadvantaged students a chance to build their Cultural and Social Capital throughout their studies.

[223] A recent paper by Reeves & de Vries (2018) found that cultural consumption is positively associated with higher earnings, social mobility and career progression.

or reducing the incidence of problematic behaviours at school. A similar framework could also be applied to these areas to explore whether measures of Cultural and Social Capital are significantly associated (as we suspect this will be the case). We now suggest how some existing policy initiatives could be adapted to bolster an individual's Cultural Capital, Habitus and Social Capital.

Earlier in this thesis we identified that SSLPs were previously tasked with tackling disadvantage in the early years by trying to improve child developmental outcomes. However, in recent years Sure Start has had its' funding reduced and has become less targeted, instead focusing on the provision of childcare and getting mothers back into work. Both our results and the literature imply that parents (or main caregivers) likely serve as important role models and facilitate access to cultural activities. They may as a result be instrumental in shaping their child's views with respect to education. We therefore argue that Sure Start centres could re-focus their attention on both informing and engaging parents with the educational process - perhaps by emphasising the link between the importance of a good education and later life satisfaction. Indeed, more specific targeted interventions may be particularly beneficial just before key milestones in the educational process, e.g. being able to read and write prior to starting school, school selection and subject choices.

Later, as children progress through the education system, the pupil premium[224] (introduced in 2011) provides additional funding to schools to help close the socioeconomic gap in attainment. This is important because prior attainment (at GCSE and A-level) remains the best predictor for both HE participation and outcomes (BIS, 2010). The DfEs Teaching and Learning Toolkit is relevant here. As this was designed to help schools use the pupil-premium more effectively. Specifically, it provides an accessible source of information, which assesses both the cost, impact and strength of the evidence base for various initiatives conceived to support disadvantaged pupils. This is of relevance to universities as it suggests peer tutoring, mentoring, summer schools and Arts participation are particularly effective and value for money. Therefore, we

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[224] Pupil premium 2018-19 is set at £1,320 for pupils in reception to year 6 and £935 for pupils in year 7 to 11. To be eligible students need to have qualified for FSM at any point in the last 6 years; attend a maintained school, academy or free school (if has special educational needs and cannot attend a mainstream school), voluntary-sector (with LA agreement) or non-maintained special schools (again for those with special educational needs). Moreover, the pupil premium rises to £2,300 if pupil is adopted, special guardianship order or has a child arrangement order; in local authority care for 1 day or more in the past year or as both eligible for FSM in the last 6 years and as being looked after (or left Local Authority care). Total expenditure is expected to be in the region of £2.4bn in 2018/19.

suggest that given our findings and this new evidence that the pupil premium could be utilised or additional funding provided to schools to help tackle disparities in Arts participation by financing the cost of certain extracurricular activities, e.g. music lessons or school trips, for pupils from disadvantaged backgrounds. This suggestion is also supported by a report by think tank LKMco (2017), confirming that not only disadvantaged background affects academic attainment but also opportunities.

Initiatives like the school literacy hour could also be expanded. We envisage that this would, not only raise educational attainment, but also help reduce the gap in an individual's cultural knowledge and thus help children (who perhaps otherwise would not read works of literature) to more convincingly showcase their cultural competence to others. This may help them secure opportunities that they otherwise would not arise, supporting social mobility. Separately, it is also troubling that academic attainment for boys has fallen behind that of girls[225] (Sutton Trust, 2015a). We believe this may partly be because of cultural and social norms. For instance, boys may under-utilise their stores of Cultural Capital if doing well academically is perceived as a feminine trait (Dumais, 2002). The lack of male teachers (role model) at school, particularly at primary level (HEPI, 2016) may also be a contributory factor. Separately, it may also be a stylised fact in families that certain subjects may be perceived as either male or female pursuits, e.g. boys are good at the hard sciences[226] (Science, Technology, Engineering and Mathematics), whereas girls excel at the Arts and Humanities. These norms may be, sometimes inadvertently be reinforced at school. If so, this could be possibly addressed through some combination of Sure Start, public awareness campaign, recruitment and training for school staff.

Previously, national outreach activities and initiatives, like the (now closed) Aimhigher, had a role in encouraging HE participation from these underrepresented groups and appeared to represent value for taxpayer's money (Chilosi et al., 2010). However, this changed with the decentralisation of Aimhigher in 2011, with most universities now required to fulfil these responsibilities as part of their outreach remits. As such, universities also serve an important role both in this regard but also with respect to

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[225] Note that there may also be a development issue at play here if boys develop more slowly. Life-long learning may also be a route for boys who might develop at slower pace.

[226] There has been a couple of recent individual moves to change this perception worth noting, with the release of the book "Inferior: how science got women wrong" in 2017 by Angela Saini and the female scientist Jess Wade who is editing Wikipedia to emphasise the contribution of women in science.

marketing their courses and prompting applications from prospective students in sixth form. This is particularly important given that Anders & Micklewright (2015) show that educational expectations start lower and fall fastest for those young people who originate from less affluent family backgrounds. One way in which applications might be prompted is through establishing a comprehensive programme of speakers from a range of backgrounds and opportunities for coaching/mentoring within schools. Rhodes & DuBois (2008) do however caution that mentor-mentee relationships can work to adversely affect outcomes by serving to disengage students[227].

Many of these opportunities are currently either facilitated or provided by university outreach teams. Indeed, forging closer relations between schools and universities in terms of outreach could also yield additional synergies. We believe a recent report by the Sutton Trust (2015b), which evaluates access, is particularly relevant here. Aside from the fact the report states that much of the WP work appears to be being done by less prestigious institutions; it identifies gaps in understanding, e.g. lack of rigorous research (randomized trials with a control group) assessing the impact of UK-based interventions[228] and lacklustre evidence-based approaches (however enthusiastic and well-intentioned outreach practitioners may be). It also notes that much of the work is currently qualitative, citing a lack of data. Nevertheless, it does say that summer schools (residential programmes), tutoring, mentoring, multi-year combined interventions and personalized application information and assistance have the most evidence of success. Moreover, common features of successful outreach programmes are: combining several strategies into one longitudinal programme, improving academic attainment, intervening early, involving teachers and working closely with parents. More generally, we also suggest that UK policy makers draw on emerging findings and experiences of the new school-based Big Brothers Big Sisters of America programme, which is designed for children in grades 3-5 (aged between 8 and 11) in elementary school to design or adapt existing initiatives.

While reviewing the school effects literature in our third empirical chapter, we presented evidence which suggests that a proportion of schools may be differentially effective

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[227] Langhout et al. (2004) report that, in order to promote positive developmental change, mentoring relationships need to establish close and enduring connections. This is more likely to be established if mentors adopt a flexible youth-centred style, which takes into account the young person's preferences and interests. As opposed to mentors focusing on their own agendas or relationship expectations.

[228] Note that the report also points out that, at the time of writing, Kings College (London) started a series of randomized trials. To date, the findings have yet to be published.

(Dearden et al., 2011), i.e. some are maximizing their attainment of certain groups of students but not all. We should, however point out here that there has been a concerted effort away from aggregate performance measures towards more value-added base methods of ranking to help tackle this. This problem is likely to have arisen due to misaligned incentives between schools and pupils. As school performance is measured against a set of metrics (the largest component of which is usually based on national exam performance); schools have the incentive to maximize collective performance of their pupils against certain benchmarks. Failure to encourage and stretch high-ability students or maximise attainment of those who are not close to achieving a national performance benchmark is wasting potential. Clearly, this area needs additional policy attention to help re-align a school's incentives so that attainment is maximized across the social spectrum. Nevertheless, there is growing consensus in the literature that Education in itself cannot provide a route to social mobility but lowering barriers can.

To sum up, the findings presented herein represent a substantial contribution to both the UK HE participation, and Cultural Capital, Habitus and Social Capital literatures. Specifically, this research has helped fill a gap in understanding by providing evidence that Cultural and Social Capital are associated with HE participation in a UK context. More generally, this study is one of the first to incorporate measures of Cultural Capital, Habitus and Social Capital within the same modelling framework. From a methodological perspective, the study also contributes by the way in which we operationalise our measures of Cultural Capital, Habitus and Social Capital. Moreover, not only does this area offer a promising avenue of research but non-attainment-based WP measures likely represent an under-utilised policy avenue for achieving more equitable participation.

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8. APPENDIX

8.1 Principal Components Analysis summary: descriptive statistics and component matrices for our cognitive ability principal component (g_i)

		PCA Descriptive Statistics			
NCDS		**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations		13,795	6,306	3,090	3,216
n. variables		3	3	3	3
Determinant of the correlation matrix*		0.148	0.170	0.157	0.175
Kaiser-Meyer-Olkin statistic**		0.746	0.742	0.742	0.742
Individual Kaiser-Meyer-Olkin statistics***		≥0.716	≥0.713	≥0.709	≥0.716
Bartlett's Test of Sphericity	Approx. Chi-Square	26,337.356	11,177.096	5,713.740	5,592.459
	d.f.	3	3	3	3
	Sig.	0.000	0.000	0.000	0.000
Rotation		N/A	N/A	N/A	N/A
Number of components extracted		1	1	1	1
Scores method		Regression	Regression	Regression	Regression
Cumulative variance explained		83.485	82.236	82.881	81.929
Eigenvalue****		2.505	2.467	2.486	2.458
Percentage of non-redundant residuals > 0.05*****		100%	100%	100%	100%

		PCA Descriptive Statistics			
BCS70		**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations		11,685	5,244	2,454	2,790
n. variables		3	3	3	3
Determinant of the correlation matrix*		0.218	0.242	0.243	0.229
Kaiser-Meyer-Olkin statistic**		0.735	0.733	0.724	0.740
Individual Kaiser-Meyer-Olkin statistics***		≥0.714	≥0.715	≥0.694	≥0.730
Bartlett's Test of Sphericity	Approx. Chi-Square	17,778.246	7,430.041	3,471.861	4,105.604
	d.f.	3	3	3	3
	Sig.	0.000	0.000	0.000	0.000
Rotation		N/A	N/A	N/A	N/A
Number of components extracted		1	1	1	1
Scores method		Regression	Regression	Regression	Regression
Cumulative variance explained		79.636	78.468	78.095	79.279
Eigenvalue****		2.389	2.354	2.343	2.378
Percentage of non-redundant residuals > 0.05*****		100%	100%	100%	100%

*Should be greater than the necessary value of 0.00001.
**KMO < 0.5 is unacceptable, 0.5 ⩾ KMO < 0.7 is mediocre, 0.7 ⩾ KMO < 0.8 is good, 0.8 ⩾ KMO < 0.9 is great and 0.9 ⩾ KMO is superb.
***These should be greater than the necessary value of 0.5.
****For extracted coefficients this should exceed 0.9.
*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern

	Component Matrices			
NCDS	**Cohort**	**Sample**	**Male subsample**	**Female subsample**
Mathematics Test Score	0.925	0.919	0.924	0.916
Reading Test Score	0.894	0.887	0.888	0.886
General Ability Test Score (verbal + non-verbal scores)	0.922	0.914	0.918	0.914

	Component Matrices			
BCS70	**Cohort**	**Sample**	**Male subsample**	**Female subsample**
Friendly Mathematics Test Score	0.902	0.893	0.897	0.892
Edinburgh Reading Test Score	0.902	0.895	0.900	0.895
British Ability Scale Test Score	0.873	0.869	0.853	0.884

8.2 Principal Components Analysis summary: descriptive statistics and component matrices for our derived Cultural Capital principal components (CC_i)

	PCA Descriptive Statistics			
NCDS	**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations	11,130	6,306	3,090	3,216
n. variables	6	6	6	6
Determinant of the correlation matrix*	0.388	0.392	0.369	0.410
Kaiser-Meyer-Olkin statistic**	0.513	0.510	0.512	0.507
Individual Kaiser-Meyer-Olkin statistics***	≥0.506	≥0.504	≥0.506	≥0.503
Bartlett's Approx. Chi-Square	10,545.252	5,905.737	3,073.166	2,865.864
Test of d.f.	15	15	15	15
Sphericity Sig.	0.000	0.000	0.000	0.000
Rotation	Varimax	Varimax	Varimax	Varimax
Number of components extracted	3	3	3	3
Scores method	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained	69.041	68.774	69.335	68.142
Eigenvalue****	1.071	1.081	1.096	1.091
Percentage of non-redundant residuals > 0.05*****	33%	26%	20%	33%

	PCA Descriptive Statistics			
BCS70	**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations	13,088	5,244	2,454	2,790
n. variables	7	7	7	7
Determinant of the correlation matrix*	0.595	0.621	0.609	0.637
Kaiser-Meyer-Olkin statistic**	0.658	0.646	0.659	0.649
Individual Kaiser-Meyer-Olkin statistics***	≥0.626	≥0.613	≥0.631	≥0.619
Bartlett's Approx. Chi-Square	6,802.454	2,493.222	1,215.512	1,257.040
Test of d.f.	21	21	21	21
Sphericity Sig.	0.000	0.000	0.000	0.000
Rotation	Varimax	Varimax	Varimax	Varimax
Number of components extracted	3	3	3	3
Scores method	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained	58.281	57.704	58.240	56.996
Eigenvalue****	0.979	0.987	0.993	0.984
Percentage of non-redundant residuals > 0.05*****	61%	71%	61%	71%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ⩾ KMO < 0.7 is mediocre, 0.7 ⩾ KMO < 0.8 is good, 0.8 ⩾ KMO < 0.9 is great and 0.9 ⩾ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern

8.2 (Continued)

NCDS	Rotated Component Matrices Cultural Participation	 Interest in Literature	 Engagement in Media
Cohort			
(Parent) Does Mum take child for walks and visits	0.935	0.051	0.014
(Parent) Does Dad take child for walks and visits	0.936	0.047	0.000
(Teacher) Does pupil borrow books from library	0.037	0.800	-0.059
(Teacher) Pupil reads newspapers, magazines and comics	0.010	0.097	0.736
(Teacher) Pupil listens to radio out of school hours	0.001	-0.029	0.762
(Teacher) Pupil reads books-not school, homework	0.047	0.768	0.134
Component	(1)	(2)	(3)
Sample			
(Parent) Does Mum take child for walks and visits	0.935	0.054	0.020
(Parent) Does Dad take child for walks and visits	0.936	0.036	0.001
(Teacher) Does pupil borrow books from library	0.028	0.798	-0.046
(Teacher) Pupil reads newspapers, magazines and comics	0.015	0.054	0.742
(Teacher) Pupil listens to radio out of school hours	0.001	0.001	0.754
(Teacher) Pupil reads books-not school, homework	0.049	0.772	0.106
Component	(1)	(2)	(3)
Male subsample			
(Parent) Does Mum take child for walks and visits	0.938	0.058	0.010
(Parent) Does Dad take child for walks and visits	0.939	0.042	0.013
(Teacher) Does pupil borrow books from library	0.029	0.797	-0.017
(Teacher) Pupil reads newspapers, magazines and comics	-0.018	0.056	0.749
(Teacher) Pupil listens to radio out of school hours	0.036	-0.008	0.754
(Teacher) Pupil reads books-not school, homework	0.056	0.783	0.068
Component	(1)	(2)	(3)
Female subsample			
(Parent) Does Mum take child for walks and visits	0.934	0.029	0.021
(Parent) Does Dad take child for walks and visits	0.933	0.041	-0.005
(Teacher) Does pupil borrow books from library	0.026	0.771	-0.070
(Teacher) Pupil reads newspapers, magazines and comics	0.044	0.155	0.725
(Teacher) Pupil listens to radio out of school hours	-0.031	-0.106	0.769
(Teacher) Pupil reads books-not school, homework	0.033	0.756	0.119
Component	(1)	(2)	(3)

8.2 (Continued)

	Rotated Component Matrices		
BCS70	**Cultural Participation**	**Extended Literary Works**	**Engagement in Media**
Cohort			
(Parent) Family Activities: Go for outings together	0.792	0.034	-0.064
(Parent) Family Activities: Go for walks	0.789	0.042	0.019
(Parent) Cohort member spare time activities: Goes to a museum of any kind	0.504	0.272	0.233
(Parent) Cohort member spare time activities: Reads books	0.071	0.783	0.075
(Parent) Cohort member spare time activities: Goes to the library	0.151	0.707	0.154
(Parent) Scale: Children's skills: Reads comics and magazines	-0.009	-0.555	0.489
(Parent) Cohort member spare time activities: Listens to the radio	0.048	0.178	0.831
Component	(1)	(2)	(3)
Sample			
(Parent) Family Activities: Go for outings together	0.793	0.023	-0.066
(Parent) Family Activities: Go for walks	0.785	0.057	0.028
(Parent) Cohort member spare time activities: Goes to a museum of any kind	0.476	0.243	0.321
(Parent) Cohort member spare time activities: Reads books	0.050	0.780	0.089
(Parent) Cohort member spare time activities: Goes to the library	0.145	0.679	0.208
(Parent) Scale: Children's skills: Reads comics and magazines	-0.021	-0.581	0.495
(Parent) Cohort member spare time activities: Listens to the radio	0.027	0.169	0.800
Component	(2)	(1)	(3)
Male subsample			
(Parent) Family Activities: Go for outings together	0.788	0.030	-0.072
(Parent) Family Activities: Go for walks	0.775	0.052	0.057
(Parent) Cohort member spare time activities: Goes to a museum of any kind	0.466	0.278	0.351
(Parent) Cohort member spare time activities: Reads books	0.046	0.764	0.157
(Parent) Cohort member spare time activities: Goes to the library	0.146	0.673	0.195
(Parent) Scale: Children's skills: Reads comics and magazines	-0.018	-0.646	0.345
(Parent) Cohort member spare time activities: Listens to the radio	0.012	0.064	0.874
Component	(2)	(1)	(3)
	Cultural Participation	**Arts Participation**	**Engagement in Media**
Female subsample			
(Parent) Family Activities: Go for outings together	0.805	0.032	-0.074
(Parent) Family Activities: Go for walks	0.800	0.079	0.016
(Parent) Cohort member spare time activities: Goes to a museum of any kind	0.428	0.407	0.163
(Parent) Cohort member spare time activities: Reads books	0.034	0.722	-0.254
(Parent) Cohort member spare time activities: Goes to the library	0.118	0.705	-0.009
(Parent) Scale: Children's skills: Reads comics and magazines	-0.013	-0.246	0.803
(Parent) Cohort member spare time activities: Listens to the radio	0.019	0.490	0.520
Component	(2)	(1)	(3)

8.3 Principal Components Analysis summary: descriptive statistics and component matrices for our derived Social Capital components (SC_i)

		PCA Descriptive Statistics			
NCDS		**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations		11,018	6,306	3,090	3,216
n. variables		5	5	5	5
Determinant of the correlation matrix*		0.910	0.915	0.914	0.913
Kaiser-Meyer-Olkin statistic**		0.554	0.553	0.556	0.560
Individual Kaiser-Meyer-Olkin statistics***		≥0.528	≥0.527	≥0.535	≥0.529
Bartlett's Test of Sphericity	Approx. Chi-Square	1,042.351	562.350	276.104	292.015
	d.f.	10	10	10	10
	Sig.	0.000	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax	Varimax
Number of components extracted		3	3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		67.514	67.342	67.230	67.369
Eigenvalue****		0.954	0.959	0.946	0.969
Percentage of non-redundant residuals > 0.05*****		50%	40%	60%	70%

		PCA Descriptive Statistics			
BCS70		**Cohort**	**Sample**	**Male subsample**	**Female subsample**
n. observations		11,090	5,244	2,454	2,790
n. variables		5	5	5	5
Determinant of the correlation matrix*		0.916	0.918	0.886	0.928
Kaiser-Meyer-Olkin statistic**		0.573	0.579	0.593	0.575
Individual Kaiser-Meyer-Olkin statistics***		≥0.456	≥0.483	≥0.521	≥0.479
Bartlett's Test of Sphericity	Approx. Chi-Square	970.834	450.035	291.690	207.187
	d.f.	10	10	10	10
	Sig.	0.000	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax	Varimax
Number of components extracted		3	3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		66.458	66.198	67.457	65.548
Eigenvalue****		0.937	0.929	0.922	0.931
Percentage of non-redundant residuals > 0.05*****		80%	90%	80%	80%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ⩾ KMO < 0.7 is mediocre, 0.7 ⩾ KMO < 0.8 is good, 0.8 ⩾ KMO < 0.9 is great and 0.9 ⩾ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern

8.3 (Continued)

	Rotated Component Matrices		
NCDS	**Social Participation**	**Structured Participation**	**Introversion**
Cohort			
(Parent) Child Prefers to do things alone	-0.046	-0.032	0.987
(Teacher) Pupil meets friends out of school	0.777	0.038	0.008
(Teacher) Pupil goes to clubs outside of school	0.126	0.719	-0.136
(Teacher) Pupil goes to school clubs outside of school hours	-0.043	0.802	0.093
(Teacher) Pupil takes part in sport out of school	0.763	0.041	-0.070
Component	(1)	(2)	(3)
Sample			
(Parent) Child Prefers to do things alone	-0.044	-0.027	0.976
(Teacher) Pupil meets friends out of school	0.770	0.040	-0.030
(Teacher) Pupil goes to clubs outside of school	0.108	0.714	-0.187
(Teacher) Pupil goes to school clubs outside of school hours	-0.027	0.799	0.143
(Teacher) Pupil takes part in sport out of school	0.773	0.036	-0.029
Component	(1)	(2)	(3)
Male subsample			
(Parent) Child Prefers to do things alone	-0.058	-0.026	0.991
(Teacher) Pupil meets friends out of school	0.790	0.026	0.029
(Teacher) Pupil goes to clubs outside of school	0.101	0.732	-0.082
(Teacher) Pupil goes to school clubs outside of school hours	-0.026	0.787	0.051
(Teacher) Pupil takes part in sport out of school	0.750	0.050	-0.101
Component	(1)	(2)	(3)
Female subsample			
(Parent) Child Prefers to do things alone	-0.030	-0.017	0.953
(Teacher) Pupil meets friends out of school	0.757	0.035	-0.075
(Teacher) Pupil goes to clubs outside of school	0.139	0.684	-0.273
(Teacher) Pupil goes to school clubs outside of school hours	-0.033	0.818	0.193
(Teacher) Pupil takes part in sport out of school	0.779	0.051	0.022
Component	(1)	(2)	(3)

8.3 (Continued)

	Rotated Component Matrices		
BCS70	**Social Participation**	**Outgoing**	**Introversion**
Cohort			
(Parent) Scale: Child's behaviour – does things on own-rather solitary	0.032	0.019	0.920
(Parent) Cohort member activities on own: Plays in the streets	0.004	0.939	-0.001
(Parent) Cohort member spare time activities: Goes to a club or organisation	0.776	-0.024	-0.205
(Parent) Cohort member spare time activities: sports	0.610	0.302	0.253
(Teacher) Scale: Perceived social networks of cohort member	0.520	-0.247	0.301
Component	(1)	(3)	(2)
	Structured Participation	**Outgoing**	**Social Independence**
Sample			
(Parent) Scale: Child's behaviour – does things on own-rather solitary	-0.135	0.071	0.789
(Parent) Cohort member activities on own: Plays in the streets	-0.024	0.943	-0.061
(Parent) Cohort member spare time activities: Goes to a club or organisation	0.911	-0.055	-0.011
(Parent) Cohort member spare time activities: sports	0.447	0.353	0.435
(Teacher) Scale: Perceived social networks of cohort member	0.198	-0.138	0.604
Component	(2)	(3)	(1)
	Structured Participation	**Outgoing**	**Social Independence**
Male subsample			
(Parent) Scale: Child's behaviour – does things on own-rather solitary	-0.215	0.022	0.733
(Parent) Cohort member activities on own: Plays in the streets	-0.021	0.973	0.006
(Parent) Cohort member spare time activities: Goes to a club or organisation	0.931	-0.026	0.060
(Parent) Cohort member spare time activities: sports	0.332	0.249	0.598
(Teacher) Scale: Perceived social networks of cohort member	0.171	-0.113	0.641
Component	(2)	(3)	(1)
	Structured Participation	**Outgoing**	**Socialite**
Female subsample			
(Parent) Scale: Child's behaviour – does things on own-rather solitary	0.533	-0.128	0.127
(Parent) Cohort member activities on own: Plays in the streets	0.002	0.987	-0.004
(Parent) Cohort member spare time activities: Goes to a club or organisation	0.701	-0.020	-0.098
(Parent) Cohort member spare time activities: sports	0.700	0.116	0.101
(Teacher) Scale: Perceived social networks of cohort member	0.076	-0.004	0.983
Components	(1)	(2)	(3)

8.4 Alternate Social Capital specification – descriptive statistics of potential variables

BCS: Alternate Social Capital variables - Descriptive Statistics	**Obs.**	**Mean**	**Skewness**	**Min**	**Max**
Number of other close friends at school	6,093	5.61	-0.10	0	9
Number of other close friends outside school	5,967	4.90	0.10	0	9
Number of school friends who live very near	3,851	4.53	4.16	1	50
Number of school friends who live near	3,111	4.31	4.02	1	50
Number of school friends live few miles away	3,060	4.86	3.79	1	50
Number of school friends live long way away	1,452	4.70	3.80	1	50
Number of other friends who live very near	3,610	4.79	3.41	1	50
Number of other friends who live near	2,581	4.51	3.67	1	50
Number of other friends who live few miles away	2,554	4.78	3.27	1	50
Number of other friends who live long way away	2,239	4.65	3.59	1	50

8.5 Descriptive statistics comparing non- and participants in Higher Education by sample, derived for the National Child Development Study and British Cohort Study 1970 respectively

		Descriptive statistics							
		Cohort		**Sample**		**Male subsample**		**Female subsample**	
NCDS		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Sample sizes (*n.*)		9,740	1,402	5,441	865	2,598	492	2,843	373
Respective rates of participation in HE (%)		87.42*	12.58*	86.28*	13.72*	84.01*	15.92*	88.40*	11.60*
Gender	Female (%)	51.91*	45.08*	52.25*	43.12*	-	-	-	-
	Male (%)	48.09*	54.92*	47.75*	56.88*	-	-	-	-
Income (age 16)	Mean (£ pw)	47.00*	55.14*	48.29*	55.32*	48.28*	54.46*	48.31*	56.51*
	10th Percentile (£ pw)	26.50	31.50	29.50	32.00	29.50	33.50	29.50	29.50
	25th Percentile (£ pw)	35.00	42.00	37.00	42.00	37.00	42.00	37.00	41.50
	50th Percentile (£ pw)	46.00	56.00	47.00	56.00	47.00	56.00	47.00	58.00
	75th Percentile (£ pw)	57.00	66.00	57.50	66.50	57.50	75.00	57.50	67.50
	90th Percentile (£ pw)	67.50	80.50	68.50	80.00	69.00	77.50	68.50	84.50
	Insufficient data (%)	7.39*	5.63*	8.64*	5.43*	8.43*	4.07*	8.83	7.24
	Not Stated (%)	23.49	24.11	24.11	25.43	24.56	25.41	23.71	25.47
	Missing (%)	9.38	10.13	-	-	-	-	-	-
Father's occupational social status (age 11)	Professional (%)	3.38*	15.33*	4.21*	18.15*	4.73*	17.68*	3.73*	18.77*
	Intermediate (%)	14.01*	29.53*	17.66*	34.57*	16.86*	33.54*	18.40*	35.92*
	Skilled non-manual (%)	7.50*	11.84*	9.19*	14.22*	8.93*	15.04*	9.43*	13.14*
	Skilled manual (%)	36.83*	20.04*	44.48*	23.35*	45.07*	23.58*	43.93*	23.06*
	Semiskilled (%)	15.21*	5.85*	17.67*	6.47*	17.09*	7.31*	18.18*	5.37*
	Unskilled (%)	5.08*	1.21*	5.35*	1.50*	5.89*	1.63*	4.85*	1.34*
	Not applicable (%)	10.53	8.41	1.45	1.73	1.42	1.22	1.48	2.41
	Missing (%)	7.11	7.64	-	-	-	-	-	-

8.5 (Continued)

		Descriptive statistics							
		Cohort		**Sample**		**Male subsample**		**Female subsample**	
NCDS – (Continued)		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Domicile region (age 11)	North (%)	6.88	6.13	7.37	6.36	7.85	7.32	6.93	5.09
	North-West (%)	11.18	10.70	10.07	10.75	9.47	9.96	10.62	11.8
	East and West Riding (%)	8.28	7.28	8.67	8.55	8.85	8.74	8.51	8.31
	North-Midlands (%)	7.45	6.42	7.98	6.36	8.16	6.50	7.81	6.17
	Midlands (%)	8.99*	7.13*	9.74*	7.40*	10.08	7.72	9.43	6.97
	East (%)	8.30	7.35	9.69	8.09	9.55	8.13	9.81	8.04
	South East (%)	15.52*	19.54*	16.87*	20.35*	17.21	18.29	16.57*	23.06*
	South (%)	6.05	6.13	6.36	7.05	6.16	7.11	6.54	6.97
	South West (%)	6.10	6.56	6.95	8.32	6.74	8.13	7.14	8.58
	Wales (%)	5.18	5.71	5.73	7.17	5.77	7.32	5.70	6.97
	Scotland (%)	9.01	9.49	10.57	9.60	10.16	10.77	10.94	8.04
	Not in PMS58 (%)	7.05	7.56	-	-	-	-	-	-
Mother's age at which she left full-time education[229]	Min (Years)	-	-	-	-	-	-	-	-
	Max (Years)	-	-	-	-	-	-	-	-
	Median (Years)	-	-	-	-	-	-	-	-
	No questionnaire (%)	-	-	-	-	-	-	-	-
	Not stated (%)	17.28	17.76	16.78	18.61	17.36	18.09	16.25	19.30
	Missing (%)	9.57	10.34	-	-	-	-	-	-
Siblings	Min (Number of)	0	0	0	0	0	0	0	0
	Max (Number of)	13	9	13	8	12	8	13	7
	Median (Number of)	2	2	2	2	2	2	2	2
	Insufficient data (%)	0.92	0.43	0.97	0.58	1.04	0.41	0.91	0.80
	Not Stated (%)	16.53	16.76	16.19	17.69	16.86	17.28	15.58	18.23
	Missing (%)	9.38	10.13	-	-	-	-	-	-

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[229] We are unable to present min, max and median (years) for the age at which the NCDS cohort member's mother-figure left full-time education. This is due to the way in which the variable is coded in the raw data. For instance, mother's age at which she left full-time education for the NCDS contains the following categories: (1) 'under 13 years', (2) 13 to 14 years and so on until (10) '23 or more years'.

8.5 (Continued)

BCS70		Descriptive statistics							
		Cohort		Sample		Male subsample		Female subsample	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Sample sizes (*n.*)		7331	2219	3965	1279	1856	598	2109	681
Respective rates of participation in HE (%)		76.76*	23.24*	75.61*	24.39*	75.63*	24.37*	75.59*	24.41*
Gender	Female (%)	52.58	50.88	53.19	53.24	-	-	-	-
	Male (%)	47.42	49.12	46.81	46.76	-	-	-	-
Income (age 16)	Mean (£ pw)	198.42*	282.77*	201.09*	282.09*	202.51*	287.75*	202.51*	287.75*
	10th Percentile (£ pw)	75.00	125.00	75.00	125.00	75.00	75.00	75.00	125.00
	25th Percentile (£ pw)	125.00	175.00	125.00	175.00	125.00	125.00	125.00	175.00
	50th Percentile (£ pw)	175.00	275.00	175.00	275.00	175.00	175.00	175.00	275.00
	75th Percentile (£ pw)	275.00	375.00	275.00	375.00	275.00	275.00	275.00	375.00
	90th Percentile (£ pw)	375.00	500.00	325.00	475.00	375.00	375.00	375.00	475.00
	No Questionnaire (%)	12.05	13.66	13.67	13.14	14.87	13.71	14.87	13.71
	Not Stated (%)	16.82	16.40	21.13	19.00	20.64	18.39	20.64	18.39
	Missing (%)	20.52	14.96	-	-	-	-	-	-
Father's occupational social status (age 10)	Professional (%)	3.03*	14.11*	3.25*	14.39*	3.45*	16.05*	3.45*	16.05*
	Intermediate (%)	17.31*	32.50*	20.15*	37.84*	20.20*	35.45*	20.20*	35.45*
	Skilled non-manual (%)	7.79	8.30	8.90	9.30	9.21	11.54	9.21	11.54
	Skilled manual (%)	38.40*	21.09*	44.01*	25.65*	44.07*	25.08*	44.07*	25.08*
	Semiskilled (%)	10.25*	5.05*	11.27*	5.39*	11.10*	5.69*	11.10*	5.69*
	Unskilled (%)	3.13*	0.63*	3.48*	0.47*	3.66*	0.84*	3.66*	0.84*
	Insufficient data (%)	1.91*	1.44*	1.84	1.41	1.67	0.67	1.67	0.67
	No data (%)	7.31	5.90	7.09	5.55	6.63	4.68	6.63	4.68
	Unclassifiable (%)	-	-	-	-	-	-	-	-
	Missing (%)	10.89	10.99	-	-	-	-	-	-

8.5 (Continued)

		Descriptive statistics							
		Cohort		**Sample**		**Male subsample**		**Female subsample**	
BCS70 – (Continued)		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Domicile region (age 10)	North (%)	5.59	4.64	7.77	6.41	8.35	5.69	8.35	5.69
	York & Humberside (%)	8.50	7.25	10.26	9.85	9.21	10.03	9.21	10.03
	North-West (%)	9.67	9.47	11.90	11.88	11.58	11.71	11.58	11.71
	East Midlands (%)	6.30*	4.59*	7.89*	5.39*	8.14*	5.52*	8.14*	5.52*
	West Midlands (%)	8.69	8.06	10.57	10.24	11.37	11.04	11.37	11.04
	East (%)	-	-	-	-	-	-	-	-
	East Anglia (%)	2.89	2.98	4.29	4.14	4.42	4.52	4.42	4.52
	South East (%)	20.34	23.48	22.75	27.44	23.49	25.75	23.49	25.75
	South (%)	-	-	-	-	-	-	-	-
	South West (%)	6.82*	5.32*	7.99	7.04	6.52	7.02	6.52*	7.02*
	Wales (%)	4.69	4.69	6.63	6.57	7.17	6.19	7.17	6.19
	Scotland (%)	8.17	8.65	9.94	11.02	9.75	12.54	9.75	12.54
	Overseas (%)	0.23	0.22	-	-	-	-	-	-
	Missing (%)	18.10*	20.64*	-	-	-	-	-	-
Mother's age at which she left full-time education	Min (Years)	10	10	11	10	11	10	11	10
	Max (Years)	50	47	43	47	35	47	35	47
	Median (Years)	15	15	15	16	15	16	15	16
	No Questionnaire (%)	28.24*	16.09*	2.98*	3.13*	39.39*	21.40*	39.39*	21.40*
	Not Stated (%)	2.62	2.66	33.92	18.06	2.37	2.51	2.37	2.51
	Missing (%)	20.52*	14.96*	-	-	-	-	-	-
Siblings[230]	Min (Number of)	0	0	0	0	0	0	0	0
	Max (Number of)	-	-	-	-	-	-	-	-
	Median (Number of)	1	1	1	1	1	1	1	1
	Insufficient data (%)	8.92	9.10	10.59	10.01	8.35	8.03	8.35	8.03
	No Questionnaire (%)	38.78*	26.05*	48.12*	29.24*	55.77*	36.45*	55.77*	36.45*
	Not Stated (%)	3.49*	2.43*	4.36*	2.42*	4.53*	2.17*	4.53	2.17
	Missing (%)	20.51*	14.96*	-	-	-	-	-	-

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[230] We are unable to provide useful statistics for the maximum number of siblings a BCS70 cohort member had for similar reasons. For instance, our variable 'number of siblings a cohort member has' is generated from four constituent variables, i.e. 'number of brothers/sisters in same house older', '…younger', '… elsewhere older' and '… elsewhere younger'. Each of these is coded: (0) only child, (1) one, (2) two, (3) three, (4) four and (5) more than four.

8.6 Descriptive statistics for banded mother-figure’s age at which she left full-time education and number of siblings comparing non- and participants in Higher Education using all responses by sample, derived from the National Child Development Study and British Cohort Study 1970 respectively

		Descriptive statistics							
		Cohort		**Sample**		**Male subsample**		**Female subsample**	
NCDS		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Mother's age at which she left full-time education	x < 15 (%)	36.78*	19.90*	40.71*	23.12*	41.11*	23.37*	40.34*	22.79*
	15 ≤ x < 17 (%)	30.65	30.24	35.67	34.68	35.33	37.40	35.98	31.10
	17 ≤ x < 19 (%)	4.26*	11.41*	5.05*	12.72*	4.58*	11.59*	5.49*	14.21*
	x ≥ 19 (%)	1.46*	10.35*	1.78*	10.87*	1.62*	9.55*	1.93*	12.60*
	Not Stated (%)	17.28	17.76	16.78	18.61	17.36	18.09	16.25	19.30
	Missing (%)	9.57	10.33	-	-	-	-	-	-
Number of siblings a cohort member has	0 (%)	4.94	5.92	5.26	6.47	5.16	6.30	5.35	6.70
	1 (%)	21.30*	28.74*	25.18*	33.76*	24.83*	34.15*	25.50*	33.24*
	2 (%)	18.78	18.90	21.80	20.58	21.79	19.92	21.81	21.45
	3 (%)	12.70	12.05	14.26	13.41	14.24	14.84	14.28	11.53
	4 (%)	6.87*	3.57*	7.57*	4.16*	7.51*	3.66*	7.63	4.83
	5+ (%)	8.57*	3.50*	8.77*	3.35*	8.58*	3.46*	8.93*	3.22*
	Not Stated (%)	16.53	16.76	16.19	17.69	16.86	17.28	15.58	18.23
	Unclear (%)	0.92	0.43	0.97	0.58	1.04	0.41	0.91	0.80
	Missing (%)	9.38	10.13	-	-	-	-	-	-

8.6 (Continued)

		Descriptive statistics							
		Cohort		Sample		Male subsample		Female subsample	
BCS70		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Mother's age at which she left full-time education	x < 15 (%)	2.81	2.80	3.43	2.81	2.86	2.68	3.94	2.94
	15 ≤ x < 17 (%)	38.63*	36.23*	50.14*	45.11*	46.50*	41.81*	53.34*	48.02*
	17 ≤ x < 19 (%)	5.25*	13.29*	6.78*	15.40*	6.52*	15.72*	7.02*	15.12*
	x ≥ 19 (%)	2.07*	13.97*	2.75*	15.48*	2.37*	15.89*	3.08*	15.12*
	Not Stated (%)	2.62	2.66	2.98	3.13	2.37	2.51	3.51	3.67
	No Questionnaire (%)	28.10*	15.55*	33.92*	18.06*	39.39*	21.40*	29.11*	15.12*
	Missing (%)	20.51*	15.49*	-	-	-	-	-	-
Number of siblings a cohort member has	0 (%)	2.55*	4.64*	3.00*	6.10*	2.16*	4.68*	3.75*	7.34*
	1 (%)	13.05*	25.15*	17.12*	31.04*	14.55*	28.26*	19.39*	33.48*
	2 (%)	7.91*	11.54*	10.67*	14.23*	8.89*	13.38*	12.23	14.98
	3 (%)	2.85	3.47	3.76	3.83	3.56	4.18	3.94	3.52
	4 (%)	1.05	1.49	1.16	1.88	1.13	1.34	1.19*	2.35*
	5+ (%)	0.87	1.17	1.21	1.25	1.08	1.51	1.33	1.03
	Not Stated (%)	3.49*	2.43*	4.36*	2.42*	4.53*	2.17*	4.22	2.64
	No Questionnaire (%)	38.78*	26.05*	48.12*	29.24*	55.77*	36.45*	41.39*	22.91*
	Unclear (%)	8.92	9.10	10.59	10.01	8.35	8.03	12.57	11.75
	Missing (%)	20.52*	14.96*	-	-	-	-	-	-

8.7 Complete logistic regression results and accompanying goodness-of-fit test output estimating the influences on Higher Education participation by age 33 and 34 for our estimation sample, male and female subsamples, derived from the National Child Development Study and British Cohort Study 1970 respectively

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1) BG_i, g_i	**(2)** BG_i, g_i, CC_i ,SC_i (PCA)	**(3)** BG_i, g_i, CC_i ,SC_i (Variables)	**(1)** BG_i, g_i	**(2)** BG_i, g_i, CC_i ,SC_i (PCA)	**(3)** BG_i, g_i, CC_i ,SC_i (Variables)	**(1)** BG_i, g_i	**(2)** BG_i, g_i, CC_i ,SC_i (PCA)	**(3)** BG_i, g_i, CC_i ,SC_i (Variables)
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
	CONTROL VARIABLES								
Gender (Base case: Females)									
Male	0.443***	0.562***	0.568***	-	-	-	-	-	-
	(0.088)	*(0.092)*	*(0.095)*	-	-	-	-	-	-
Septiles of weekly household income £ – Age 16: (Base case: Septile 1)									
Septile 2	0.013	-0.045	-0.030	0.204	0.161	0.153	-0.501	-0.594*	-0.565*
	(0.208)	*(0.210)*	*(0.211)*	*(0.286)*	*(0.288)*	*(0.289)*	*(0.318)*	*(0.323)*	*(0.326)*
Septile 3	0.014	-0.069	-0.044	0.436	0.379	0.373	-0.674**	-0.789**	-0.827**
	(0.227)	*(0.228)*	*(0.230)*	*(0.287)*	*(0.290)*	*(0.293)*	*(0.331)*	*(0.335)*	*(0.342)*
Septile 4	-0.096	-0.109	-0.109	0.163	0.213	0.209	-0.680**	-0.749**	-0.708**
	(0.216)	*(0.217)*	*(0.219)*	*(0.298)*	*(0.299)*	*(0.301)*	*(0.328)*	*(0.333)*	*(0.338)*
Septile 5	-0.120	-0.162	-0.152	0.019	-0.018	-0.013	-0.413	-0.476	-0.496
	(0.215)	*(0.217)*	*(0.218)*	*(0.289)*	*(0.292)*	*(0.294)*	*(0.313)*	*(0.319)*	*(0.325)*
Septile 6	0.147	0.112	0.117	0.276	0.267	0.268	-0.178	-0.241	-0.218
	(0.201)	*(0.203)*	*(0.204)*	*(0.274)*	*(0.276)*	*(0.279)*	*(0.287)*	*(0.291)*	*(0.295)*
Septile 7	0.351*	0.365*	0.375*	0.505*	0.530*	0.554**	0.047	0.041	-0.009
	(0.199)	*(0.201)*	*(0.203)*	*(0.277)*	*(0.279)*	*(0.282)*	*(0.275)*	*(0.280)*	*(0.286)*
Not answered	-0.057	-0.080	-0.063	0.056	0.081	0.081	-0.317	-0.387	-0.388
	(0.212)	*(0.213)*	*(0.215)*	*(0.290)*	*(0.293)*	*(0.294)*	*(0.302)*	*(0.305)*	*(0.309)*
Data incomplete	-0.310	-0.336	-0.333	-0.660*	-0.666*	-0.680*	-0.132	-0.185	-0.203
	(0.237)	*(0.238)*	*(0.239)*	*(0.345)*	*(0.346)*	*(0.350)*	*(0.317)*	*(0.320)*	*(0.323)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Father's occupational social class - Age 10: (Base case: Skilled manual)									
Professional	1.105***	1.017***	1.007***	1.059***	0.955***	0.958***	1.257***	1.185***	1.160***
	(0.155)	*(0.157)*	*(0.158)*	*(0.212)*	*(0.214)*	*(0.216)*	*(0.234)*	*(0.236)*	*(0.240)*
Intermediate	0.523***	0.449***	0.452***	0.651***	0.575***	0.553***	0.365**	0.284	0.297
	(0.117)	*(0.119)*	*(0.119)*	*(0.161)*	*(0.163)*	*(0.165)*	*(0.175)*	*(0.178)*	*(0.180)*
Skilled non-manual	0.440***	0.363**	0.371**	0.628***	0.545***	0.553***	0.220	0.145	0.115
	(0.143)	*(0.145)*	*(0.146)*	*(0.192)*	*(0.195)*	*(0.197)*	*(0.221)*	*(0.223)*	*(0.227)*
Semiskilled	-0.208	-0.208	-0.210	-0.039	-0.051	-0.058	-0.437	-0.407	-0.420
	(0.172)	*(0.173)*	*(0.174)*	*(0.225)*	*(0.226)*	*(0.228)*	*(0.275)*	*(0.277)*	*(0.280)*
Unskilled	-0.149	-0.138	-0.127	-0.165	-0.174	-0.199	-0.058	0.038	0.110
	(0.314)	*(0.317)*	*(0.318)*	*(0.406)*	*(0.411)*	*(0.414)*	*(0.501)*	*(0.509)*	*(0.511)*
Not applicable	0.585*	0.559*	0.548	0.232	0.250	0.300	0.764*	0.765*	0.804*
	(0.332)	*(0.336)*	*(0.339)*	*(0.516)*	*(0.516)*	*(0.520)*	*(0.443)*	*(0.461)*	*(0.469)*
Mother's age at which she left full-time education - Age 16: (Base case: 15 to 16 years)									
x < 15	-0.174	-0.115	-0.099	-0.311**	-0.251*	-0.240	-0.052	0.006	0.046
	(0.112)	*(0.113)*	*(0.114)*	*(0.151)*	*(0.153)*	*(0.154)*	*(0.172)*	*(0.175)*	*(0.177)*
17 ≤ x < 19	0.225	0.188	0.190	0.102	0.078	0.083	0.361	0.299	0.322
	(0.154)	*(0.155)*	*(0.156)*	*(0.217)*	*(0.218)*	*(0.220)*	*(0.223)*	*(0.225)*	*(0.229)*
x ≥ 19	0.871***	0.793***	0.752***	0.962***	0.924***	0.892***	0.762***	0.607**	0.569**
	(0.198)	*(0.200)*	*(0.201)*	*(0.295)*	*(0.298)*	*(0.299)*	*(0.275)*	*(0.278)*	*(0.280)*
Not answered	0.202	0.227	0.231	0.071	0.103	0.126	0.518	0.517	0.572
	(0.310)	*(0.311)*	*(0.313)*	*(0.413)*	*(0.412)*	*(0.413)*	*(0.483)*	*(0.495)*	*(0.503)*

8.7 (Continued)

	Empirical Estimations								
	Sample			Male subsample			Female subsample		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government office region - Age 10: (Base case: South East)									
North	0.106	0.136	0.128	0.513**	0.565**	0.560**	-0.293	-0.303	-0.330
	(0.197)	*(0.199)*	*(0.200)*	*(0.258)*	*(0.261)*	*(0.264)*	*(0.317)*	*(0.322)*	*(0.322)*
North West	0.059	0.102	0.098	0.415*	0.487**	0.490**	-0.348	-0.360	-0.380
	(0.168)	*(0.170)*	*(0.171)*	*(0.238)*	*(0.242)*	*(0.244)*	*(0.243)*	*(0.247)*	*(0.251)*
East & West Riding	0.218	0.298	0.303	0.507**	0.587**	0.582**	-0.089	-0.008	-0.029
	(0.182)	*(0.185)*	*(0.186)*	*(0.249)*	*(0.252)*	*(0.255)*	*(0.273)*	*(0.277)*	*(0.282)*
North Midlands	-0.128	-0.115	-0.123	0.088	0.121	0.093	-0.401	-0.448	-0.438
	(0.194)	*(0.197)*	*(0.197)*	*(0.264)*	*(0.267)*	*(0.268)*	*(0.294)*	*(0.297)*	*(0.300)*
Midlands	-0.111	-0.081	-0.077	0.163	0.207	0.207	-0.405	-0.408	-0.411
	(0.185)	*(0.187)*	*(0.187)*	*(0.253)*	*(0.256)*	*(0.256)*	*(0.277)*	*(0.281)*	*(0.283)*
East	-0.377**	-0.369**	-0.358*	-0.139	-0.126	-0.105	-0.685**	-0.734***	-0.772***
	(0.180)	*(0.182)*	*(0.183)*	*(0.250)*	*(0.252)*	*(0.255)*	*(0.268)*	*(0.272)*	*(0.278)*
South	-0.143	-0.169	-0.155	-0.091	-0.091	-0.094	-0.225	-0.360	-0.370
	(0.197)	*(0.199)*	*(0.201)*	*(0.273)*	*(0.278)*	*(0.280)*	*(0.287)*	*(0.293)*	*(0.298)*
South West	0.167	0.173	0.148	0.358	0.409	0.389	-0.039	-0.129	-0.217
	(0.187)	*(0.189)*	*(0.190)*	*(0.259)*	*(0.263)*	*(0.265)*	*(0.276)*	*(0.281)*	*(0.287)*
Wales	0.307	0.415**	0.377*	0.514*	0.597**	0.574**	0.075	0.229	0.178
	(0.196)	*(0.198)*	*(0.200)*	*(0.272)*	*(0.275)*	*(0.279)*	*(0.290)*	*(0.294)*	*(0.299)*
Scotland	0.225	0.271	0.238	0.605***	0.646***	0.615***	-0.260	-0.223	-0.246
	(0.172)	*(0.175)*	*(0.177)*	*(0.230)*	*(0.233)*	*(0.238)*	*(0.270)*	*(0.274)*	*(0.277)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Number of siblings – Age 16: (Base case: None)									
1	-0.040	-0.048	-0.045	0.104	0.118	0.112	-0.128	-0.141	-0.178
	(0.186)	*(0.188)*	*(0.189)*	*(0.262)*	*(0.264)*	*(0.267)*	*(0.273)*	*(0.275)*	*(0.279)*
2	-0.222	-0.213	-0.223	-0.136	-0.101	-0.101	-0.266	-0.279	-0.339
	(0.194)	*(0.196)*	*(0.197)*	*(0.272)*	*(0.276)*	*(0.279)*	*(0.285)*	*(0.287)*	*(0.292)*
3	-0.135	-0.127	-0.139	-0.100	-0.081	-0.062	-0.155	-0.134	-0.200
	(0.209)	*(0.211)*	*(0.212)*	*(0.288)*	*(0.291)*	*(0.293)*	*(0.313)*	*(0.316)*	*(0.320)*
4	-0.372	-0.397	-0.401	-0.615*	-0.649*	-0.656*	-0.029	-0.011	-0.041
	(0.264)	*(0.267)*	*(0.269)*	*(0.370)*	*(0.375)*	*(0.379)*	*(0.384)*	*(0.387)*	*(0.391)*
5 or more	-0.149	-0.171	-0.172	-0.104	-0.083	-0.107	-0.183	-0.258	-0.247
	(0.284)	*(0.289)*	*(0.290)*	*(0.389)*	*(0.395)*	*(0.398)*	*(0.429)*	*(0.438)*	*(0.443)*
Not answered	-0.129	-0.164	-0.160	-0.076	-0.112	-0.115	-0.350	-0.391	-0.442
	(0.355)	*(0.357)*	*(0.359)*	*(0.471)*	*(0.473)*	*(0.477)*	*(0.557)*	*(0.568)*	*(0.574)*
Data incomplete	-0.364	-0.417	-0.409	-0.964	-1.063	-1.070	0.370	0.486	0.572
	(0.568)	*(0.575)*	*(0.574)*	*(0.899)*	*(0.913)*	*(0.889)*	*(0.723)*	*(0.725)*	*(0.736)*
Cognitive ability									
1st Order	1.692***	1.645***	1.618***	1.715***	1.695***	1.674***	1.696***	1.606***	1.587***
	(0.112)	*(0.113)*	*(0.112)*	*(0.146)*	*(0.149)*	*(0.149)*	*(0.174)*	*(0.174)*	*(0.175)*
2nd Order	-0.016	-0.024	-0.013	-0.003	-0.021	-0.009	0.001	0.005	0.008
	(0.069)	*(0.069)*	*(0.069)*	*(0.096)*	*(0.097)*	*(0.097)*	*(0.101)*	*(0.101)*	*(0.101)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS									
Cultural Capital									
Cultural Participation	-	0.009	-	-	0.010	-	-	0.025	-
	-	*(0.049)*	-	-	*(0.067)*	-	-	*(0.073)*	-
Interest in Literature	-	0.270***	-	-	0.209***	-	-	0.404***	-
	-	*(0.056)*	-	-	*(0.071)*	-	-	*(0.093)*	-
Engagement in Media	-	-0.154***	-	-	-0.136**	-	-	-0.193***	-
	-	*(0.046)*	-	-	*(0.062)*	-	-	*(0.070)*	-

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital									
Social Participation	-	-0.113**	-	-	-0.122**	-	-	-0.108	-
	-	*(0.044)*	-	-	*(0.060)*	-	-	*(0.066)*	-
Structured Participation	-	0.023	-	-	0.033	-	-	0.039	-
	-	*(0.045)*	-	-	*(0.062)*	-	-	*(0.067)*	-
Introversion	-	-0.028	-	-	-0.043	-	-	-0.029	-
	-	*(0.047)*	-	-	*(0.064)*	-	-	*(0.072)*	-
CULTURAL CAPITAL VARIABLES									
(Parent) Does mum take child for walks, visits - age 10: (Base case: Hardly ever)									
Occasionally	-	-	0.449	-	-	0.234	-	-	0.656
	-	-	*(0.360)*	-	-	*(0.455)*	-	-	*(0.657)*
Most weeks	-	-	0.237	-	-	0.116	-	-	0.375
	-	-	*(0.372)*	-	-	*(0.468)*	-	-	*(0.680)*
(Parent) Does dad take child for walks, visits - age 10: (Base case: Hardly ever)									
Occasionally	-	-	0.039	-	-	0.230	-	-	-0.005
	-	-	*(0.244)*	-	-	*(0.374)*	-	-	*(0.338)*
Most weeks	-	-	0.159	-	-	0.257	-	-	0.234
	-	-	*(0.264)*	-	-	*(0.391)*	-	-	*(0.383)*
(Teacher) Does pupil borrow books from library - age 10: (Base case: No)									
Yes	-	-	0.290**	-	-	0.122	-	-	0.642***
	-	-	*(0.117)*	-	-	*(0.147)*	-	-	*(0.210)*
(Teacher) Pupil reads newspapers, magazines and comics - age 10: (Base case: Hardly ever)									
Sometimes	-	-	0.234	-	-	0.229	-	-	0.224
	-	-	*(0.209)*	-	-	*(0.267)*	-	-	*(0.351)*
Most days	-	-	-0.032	-	-	-0.053	-	-	-0.053
	-	-	*(0.208)*	-	-	*(0.263)*	-	-	*(0.353)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Teacher) Pupil listens to radio out of school hours - age 10: (Base case: Hardly ever)									
Sometimes	-	-	-0.099	-	-	-0.114	-	-	-0.004
	-	-	*(0.126)*	-	-	*(0.164)*	-	-	*(0.205)*
Most days	-	-	-0.339***	-	-	-0.287*	-	-	-0.346*
	-	-	*(0.131)*	-	-	*(0.174)*	-	-	*(0.210)*
(Teacher) Pupil reads books-not school, homework - age 10: (Base case: Hardly ever)									
Sometimes	-	-	0.290	-	-	0.374	-	-	0.139
	-	-	*(0.230)*	-	-	*(0.266)*	-	-	*(0.495)*
Most days	-	-	0.619***	-	-	0.669**	-	-	0.576
	-	-	*(0.229)*	-	-	*(0.268)*	-	-	*(0.482)*
SOCIAL CAPITAL VARIABLES									
(Parent) Child prefers to do things alone – Age 10: (Base case: No, never)									
Yes, sometimes	-	-	0.129	-	-	0.058	-	-	0.226
	-	-	*(0.114)*	-	-	*(0.157)*	-	-	*(0.173)*
Yes, frequently	-	-	-0.043	-	-	-0.123	-	-	0.103
	-	-	*(0.134)*	-	-	*(0.180)*	-	-	*(0.211)*
(Teacher) Pupil meets friends out of school - Age 10: (Base case: Hardly ever)									
Sometimes	-	-	-0.087	-	-	-0.158	-	-	-0.041
	-	-	*(0.242)*	-	-	*(0.343)*	-	-	*(0.354)*
Most days	-	-	-0.338	-	-	-0.422	-	-	-0.286
	-	-	*(0.239)*	-	-	*(0.337)*	-	-	*(0.352)*
(Teacher) Pupil goes to clubs outside school - Age 10: (Base case: Hardly ever)									
Sometimes	-	-	0.126	-	-	-0.127	-	-	0.514***
	-	-	*(0.113)*	-	-	*(0.158)*	-	-	*(0.169)*
Most days	-	-	0.162	-	-	0.050	-	-	0.381**
	-	-	*(0.109)*	-	-	*(0.147)*	-	-	*(0.170)*
(Teacher) Pupil goes to school clubs, out of school hours - Age 10: (Base case: Hardly ever)									
Sometimes	-	-	-0.118	-	-	-0.129	-	-	-0.035
	-	-	*(0.124)*	-	-	*(0.177)*	-	-	*(0.179)*
Most days	-	-	-0.017	-	-	0.298	-	-	-0.312
	-	-	*(0.169)*	-	-	*(0.241)*	-	-	*(0.250)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Teacher) Pupil takes part in sport out of school - Age 10: (Base case: Hardly ever)									
Sometimes	-	-	-0.341**	-	-	-0.277	-	-	-0.411**
	-	-	*(0.147)*	-	-	*(0.223)*	-	-	*(0.204)*
Most days	-	-	-0.248	-	-	-0.246	-	-	-0.313
	-	-	*(0.151)*	-	-	*(0.223)*	-	-	*(0.218)*
CONSTANT									
Constant	-3.180***	-3.255***	-3.786***	-3.156***	-3.208***	-3.421***	-2.657***	-2.647***	-3.795***
	(0.270)	*(0.273)*	*(0.567)*	*(0.377)*	*(0.381)*	*(0.732)*	*(0.371)*	*(0.373)*	*(0.963)*
REGRESSION STATISTICS									
n.	6306	6306	6306	3090	3090	3090	3216	3216	3216
Log pseudo-likelihood	-1720.325	-1696.606	-1685.450	-912.779	-902.381	-895.939	-786.188	-769.432	-758.203
Pseudo R^2	0.3176	0.3270	0.3315	0.3262	0.3338	0.3386	0.3188	0.3333	0.3430
LR X^2	(38)	(44)	(59)	(37)	(43)	(58)	(37)	(43)	(58)
	1601.56	1649.00	1671.31	883.63	904.42	917.31	735.71	769.22	791.67
Prob > X^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Iterations	6	6	6	6	6	6	6	6	6
GOODNESS-OF-FIT TESTS									
Pearson goodness-of-fit test									
n. covariance patterns	6306	6306	6306	3090	3090	3090	3216	3216	3216
	(6267)	(6261)	(6246)	(3052)	(3046)	(3031)	(3178)	(3172)	(3157)
Pearson X^2	6,831.03	6370.57	6583.52	3635.56	3241.37	3308.07	3022.47	3445.58	3316.16
Prob > X^2	0.0000	0.1637	0.0015	0.0000	0.0069	0.0003	0.9759	0.0004	0.0239
Hosmer-Lemeshow goodness-of-fit test									
Groups	10	10	10	10	10	10	10	10	10
H-L X^2	(8) 14.43	(8) 8.67	(8) 11.23	(8) 18.06	(8) 14.50	(8) 7.89	(8) 7.66	(8) 6.67	(8) 6.11
Prob > X^2	0.0713	0.3706	0.1892	0.0208	0.0695	0.4445	0.4676	0.5724	0.6354
Stukel test									
X^2	(2) 3.89	(2) 6.47	(2) 5.55	(2) 2.40	(2) 6.41	(2) 6.12	(2) 0.68	(2) 0.87	(2) 2.30
Prob > X^2	0.1429	0.0394	0.0624	0.3012	0.0405	0.0470	0.7119	0.6469	0.3164

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
NCDS	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Linktest									
_hat P > |z|	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
__hatsq P > |z|	0.288	0.128	0.149	0.400	0.137	0.173	0.743	0.706	0.854
Akaike and Bayesian Information Criterions									
Log-likelihood (Null)	-2521.104	-2521.104	-2,521.10	-1354.593	-1354.593	-1354.593	-1154.040	-1154.04	-1154.040
Log-likelihood (Model)	-1720.324	-1696.606	-1,685.45	-912.780	-902.381	-895.939	-786.188	-769.433	-758.203
Degrees of freedom	39	45	60	38	44	59	38	44	59
AIC	3518.649	3483.213	3490.900	1901.559	1892.762	1909.878	1648.375	1626.865	1634.407
BIC	3781.870	3786.929	3895.856	2130.924	2158.342	2265.998	1879.259	1894.204	1992.885

Likelihood Ratio Test				
(1) < (2)	LR X^2	(6) 47.44	(6) 20.80	(6) 33.51
	Prob > X^2	0.0000	0.0020	0.0000
(1) < (3)	LR X^2	(21) 22.31	(21) 12.88	(21) 22.46
	Prob > X^2	0.0999	0.6113	0.0963

[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1) $BG_i,\ g_i$	**(2)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (PCA)	**(3)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (Variables)	**(1)** $BG_i,\ g_i$	**(2)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (PCA)	**(3)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (Variables)	**(1)** $BG_i,\ g_i$	**(2)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (PCA)	**(3)** $BG_i,\ g_i,$ $CC_i\,,SC_i$ (Variables)
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CONTROL VARIABLES									
Gender (Base case: Females)									
Male	-0.032	0.050	0.015	-	-	-	-	-	-
	(0.078)	*(0.082)*	*(0.086)*	-	-	-	-	-	-
Septiles of weekly household income £ – Age 16: (Base case: Septile 1)									
Septile 2	0.049	0.060	0.098	-0.278	-0.257	-0.205	0.309	0.318	0.352
	(0.204)	*(0.205)*	*(0.207)*	*(0.301)*	*(0.302)*	*(0.306)*	*(0.283)*	*(0.285)*	*(0.291)*
Septile 3	0.188	0.187	0.240	-0.016	-0.003	0.083	0.342	0.331	0.357
	(0.191)	*(0.192)*	*(0.194)*	*(0.275)*	*(0.276)*	*(0.280)*	*(0.271)*	*(0.273)*	*(0.278)*
Septile 4	0.369*	0.378*	0.466**	0.113	0.134	0.234	0.599**	0.620**	0.714**
	(0.197)	*(0.199)*	*(0.201)*	*(0.279)*	*(0.281)*	*(0.286)*	*(0.282)*	*(0.284)*	*(0.288)*
Septile 5	0.448**	0.458**	0.533***	0.176	0.206	0.276	0.695**	0.700**	0.792***
	(0.201)	*(0.203)*	*(0.205)*	*(0.290)*	*(0.293)*	*(0.298)*	*(0.283)*	*(0.286)*	*(0.291)*
Septile 6	0.598***	0.615***	0.670***	0.612**	0.650**	0.727**	0.565**	0.545*	0.630**
	(0.200)	*(0.201)*	*(0.204)*	*(0.282)*	*(0.284)*	*(0.288)*	*(0.287)*	*(0.289)*	*(0.295)*
Septile 7	0.839***	0.843***	0.895***	0.780***	0.793***	0.852***	0.884***	0.881***	0.949***
	(0.209)	*(0.211)*	*(0.213)*	*(0.295)*	*(0.298)*	*(0.303)*	*(0.300)*	*(0.303)*	*(0.308)*
Not stated	0.275	0.270	0.307*	0.113	0.124	0.180	0.404	0.368	0.416
	(0.176)	*(0.177)*	*(0.179)*	*(0.250)*	*(0.251)*	*(0.254)*	*(0.250)*	*(0.252)*	*(0.257)*
No questionnaire	0.330*	0.332*	0.360*	0.121	0.135	0.179	0.496*	0.473*	0.502*
	(0.188)	*(0.189)*	*(0.191)*	*(0.267)*	*(0.267)*	*(0.270)*	*(0.271)*	*(0.272)*	*(0.278)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Father's occupational social class - Age 10: (Base case: Skilled manual)									
Professional	1.037***	0.984***	0.979***	1.096***	1.054***	1.017***	1.014***	0.966***	0.975***
	(0.157)	*(0.158)*	*(0.160)*	*(0.224)*	*(0.226)*	*(0.230)*	*(0.223)*	*(0.225)*	*(0.229)*
Intermediate	0.412***	0.367***	0.346***	0.275*	0.213	0.185	0.535***	0.513***	0.464***
	(0.102)	*(0.103)*	*(0.104)*	*(0.151)*	*(0.154)*	*(0.155)*	*(0.142)*	*(0.143)*	*(0.145)*
Skilled non-manual	0.138	0.120	0.104	0.153	0.119	0.105	0.113	0.108	0.022
	(0.138)	*(0.139)*	*(0.141)*	*(0.194)*	*(0.196)*	*(0.198)*	*(0.202)*	*(0.204)*	*(0.209)*
Semiskilled	-0.116	-0.113	-0.122	-0.055	-0.065	-0.110	-0.144	-0.132	-0.148
	(0.157)	*(0.157)*	*(0.157)*	*(0.224)*	*(0.225)*	*(0.227)*	*(0.221)*	*(0.221)*	*(0.223)*
Unskilled	-1.076**	-1.056**	-1.082**	-0.622	-0.630	-0.653	-2.100**	-2.085**	-2.145**
	(0.438)	*(0.440)*	*(0.443)*	*(0.506)*	*(0.511)*	*(0.519)*	*(1.022)*	*(1.026)*	*(1.031)*
Insufficient information	0.120	0.109	0.139	-0.792	-0.745	-0.739	0.554	0.555	0.615*
	(0.299)	*(0.298)*	*(0.301)*	*(0.585)*	*(0.578)*	*(0.588)*	*(0.361)*	*(0.360)*	*(0.364)*
No data	0.237	0.259	0.247	0.074	0.055	-0.014	0.349	0.403*	0.406*
	(0.167)	*(0.168)*	*(0.169)*	*(0.259)*	*(0.260)*	*(0.266)*	*(0.223)*	*(0.225)*	*(0.228)*
Mother's age at which she left full-time education - Age 16: (Base case: 15 to 16 years)									
x < 15	0.143	0.120	0.094	0.363	0.320	0.271	0.008	-0.038	-0.036
	(0.223)	*(0.224)*	*(0.227)*	*(0.343)*	*(0.345)*	*(0.350)*	*(0.296)*	*(0.298)*	*(0.300)*
17 ≤ x < 19	0.377***	0.367***	0.363***	0.471**	0.464**	0.487**	0.302*	0.308*	0.281
	(0.124)	*(0.124)*	*(0.126)*	*(0.185)*	*(0.186)*	*(0.189)*	*(0.170)*	*(0.172)*	*(0.175)*
x ≥ 19	0.890***	0.873***	0.834***	1.071***	1.076***	1.101***	0.742***	0.709***	0.646***
	(0.153)	*(0.154)*	*(0.156)*	*(0.231)*	*(0.232)*	*(0.237)*	*(0.208)*	*(0.210)*	*(0.216)*
Not stated	0.435*	0.432*	0.379*	0.460	0.450	0.409	0.426	0.424	0.418
	(0.222)	*(0.223)*	*(0.225)*	*(0.356)*	*(0.358)*	*(0.364)*	*(0.291)*	*(0.292)*	*(0.295)*
No questionnaire	-0.222**	-0.210**	-0.210**	-0.203	-0.187	-0.173	-0.215	-0.211	-0.234
	(0.100)	*(0.100)*	*(0.101)*	*(0.139)*	*(0.140)*	*(0.141)*	*(0.147)*	*(0.148)*	*(0.151)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Age 10: (Base case: South East)									
North	0.000	0.089	0.116	0.069	0.130	0.158	-0.082	0.007	-0.010
	(0.168)	*(0.170)*	*(0.172)*	*(0.255)*	*(0.257)*	*(0.261)*	*(0.228)*	*(0.233)*	*(0.236)*
York & the Humber	0.059	0.105	0.128	0.305	0.349	0.366*	-0.157	-0.123	-0.116
	(0.144)	*(0.146)*	*(0.147)*	*(0.216)*	*(0.218)*	*(0.220)*	*(0.197)*	*(0.200)*	*(0.202)*
North West	0.062	0.147	0.161	0.228	0.298	0.358*	-0.124	-0.035	-0.071
	(0.135)	*(0.137)*	*(0.138)*	*(0.200)*	*(0.204)*	*(0.208)*	*(0.185)*	*(0.188)*	*(0.192)*
East Midlands	-0.198	-0.155	-0.117	-0.093	-0.066	-0.029	-0.304	-0.252	-0.200
	(0.170)	*(0.171)*	*(0.173)*	*(0.250)*	*(0.252)*	*(0.256)*	*(0.238)*	*(0.240)*	*(0.243)*
West Midlands	0.242*	0.276*	0.282**	0.375*	0.418**	0.443**	0.130	0.145	0.115
	(0.141)	*(0.142)*	*(0.143)*	*(0.201)*	*(0.202)*	*(0.204)*	*(0.202)*	*(0.204)*	*(0.206)*
East Anglia	0.056	0.071	0.146	0.345	0.357	0.434	-0.180	-0.180	-0.101
	(0.202)	*(0.202)*	*(0.205)*	*(0.295)*	*(0.296)*	*(0.302)*	*(0.281)*	*(0.280)*	*(0.284)*
South West	-0.237	-0.226	-0.193	0.073	0.057	0.084	-0.526**	-0.516**	-0.492**
	(0.160)	*(0.161)*	*(0.163)*	*(0.243)*	*(0.244)*	*(0.248)*	*(0.217)*	*(0.219)*	*(0.223)*
Wales	0.252	0.318*	0.381**	0.140	0.207	0.273	0.329	0.400*	0.459*
	(0.170)	*(0.171)*	*(0.174)*	*(0.254)*	*(0.256)*	*(0.263)*	*(0.231)*	*(0.235)*	*(0.240)*
Scotland	0.227	0.285**	0.342**	0.454**	0.505**	0.576***	0.025	0.092	0.144
	(0.140)	*(0.141)*	*(0.144)*	*(0.203)*	*(0.204)*	*(0.208)*	*(0.196)*	*(0.199)*	*(0.205)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Number of Siblings – Age 16: (Base case: None)									
1	-0.258	-0.223	-0.264	-0.232	-0.218	-0.295	-0.302	-0.262	-0.360
	(0.185)	*(0.186)*	*(0.188)*	*(0.311)*	*(0.311)*	*(0.316)*	*(0.235)*	*(0.236)*	*(0.241)*
2	-0.431**	-0.398**	-0.444**	-0.279	-0.272	-0.332	-0.550**	-0.507**	-0.598**
	(0.199)	*(0.200)*	*(0.202)*	*(0.330)*	*(0.331)*	*(0.336)*	*(0.255)*	*(0.257)*	*(0.261)*
3	-0.500*	-0.443*	-0.511**	-0.339	-0.304	-0.368	-0.695**	-0.669*	-0.786**
	(0.257)	*(0.259)*	*(0.261)*	*(0.400)*	*(0.402)*	*(0.407)*	*(0.349)*	*(0.352)*	*(0.355)*
4	0.231	0.309	0.290	0.006	0.034	-0.104	0.341	0.463	0.484
	(0.334)	*(0.334)*	*(0.336)*	*(0.543)*	*(0.542)*	*(0.551)*	*(0.434)*	*(0.436)*	*(0.438)*
5 or more	0.251	0.365	0.330	0.329	0.429	0.424	0.276	0.404	0.343
	(0.369)	*(0.372)*	*(0.376)*	*(0.530)*	*(0.535)*	*(0.541)*	*(0.527)*	*(0.532)*	*(0.541)*
Not stated	-0.969***	-0.888***	-0.937***	-1.255***	-1.159**	-1.266***	-0.712**	-0.634*	-0.712*
	(0.281)	*(0.282)*	*(0.285)*	*(0.452)*	*(0.452)*	*(0.460)*	*(0.363)*	*(0.364)*	*(0.367)*
No questionnaire	-0.830***	-0.777***	-0.814***	-0.822***	-0.787***	-0.819***	-0.864***	-0.818***	-0.917***
	(0.183)	*(0.184)*	*(0.186)*	*(0.303)*	*(0.303)*	*(0.307)*	*(0.236)*	*(0.238)*	*(0.243)*
Unclear	-0.553***	-0.502**	-0.549***	-0.682**	-0.641*	-0.660*	-0.477*	-0.426	-0.547**
	(0.207)	*(0.207)*	*(0.209)*	*(0.348)*	*(0.348)*	*(0.352)*	*(0.261)*	*(0.263)*	*(0.268)*
Cognitive ability									
1st Order	1.065***	1.031***	1.031***	1.005***	0.999***	1.012***	1.141***	1.093***	1.085***
	(0.049)	*(0.052)*	*(0.053)*	*(0.071)*	*(0.076)*	*(0.078)*	*(0.070)*	*(0.072)*	*(0.074)*
2nd Order	0.202***	0.199***	0.193***	0.186***	0.183***	0.170***	0.214***	0.213***	0.210***
	(0.035)	*(0.035)*	*(0.036)*	*(0.052)*	*(0.054)*	*(0.055)*	*(0.047)*	*(0.046)*	*(0.047)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS									
Cultural Capital									
Cultural Participation	-	0.109***	-	-	0.035	-	-	0.181***	-
	-	*(0.040)*	-	-	*(0.058)*	-	-	*(0.057)*	-
Extended Literary Works	-	0.060	-	-	0.033	-	-	-	-
	-	*(0.043)*	-	-	*(0.062)*	-	-	-	-
Arts Participation	-	-	-	-	-	-	-	0.089	-
	-	-	-	-	-	-	-	*(0.058)*	-
Engagement in Media	-	-0.011	-	-	-0.011	-	-	0.000	-
	-	*(0.039)*	-	-	*(0.058)*	-	-	*(0.055)*	-
Social Capital									
Structured Participation	-	-0.022	-	-	-0.031	-	-	-0.004	-
	-	*(0.041)*	-	-	*(0.059)*	-	-	*(0.056)*	-
Outgoing	-	-0.167***	-	-	-0.144**	-	-	-0.184***	-
	-	*(0.041)*	-	-	*(0.058)*	-	-	*(0.056)*	-
Social Independence	-	-0.016	-	-	-0.119**	-	-	-	-
	-	*(0.039)*	-	-	*(0.056)*	-	-	-	-
Socialite	-	-	-	-	-	-	-	0.090*	-
	-	-	-	-	-	-	-	*(0.054)*	-
CULTURAL CAPITAL VARIABLES									
(Parent) Family activities: Go for outings together - Age 10: (Base case: Rarely or never)									
Sometimes	-	-	-0.163	-	-	-0.439	-	-	0.125
	-	-	*(0.277)*	-	-	*(0.360)*	-	-	*(0.443)*
Often	-	-	-0.134	-	-	-0.550	-	-	0.328
	-	-	*(0.280)*	-	-	*(0.365)*	-	-	*(0.446)*
(Parent) Family activities: Go for walks – Age 10: (Base case: Rarely or never)									
Sometimes	-	-	-0.071	-	-	0.095	-	-	-0.172
	-	-	*(0.120)*	-	-	*(0.177)*	-	-	*(0.168)*
Often	-	-	0.072	-	-	0.223	-	-	-0.033
	-	-	*(0.138)*	-	-	*(0.207)*	-	-	*(0.191)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Parent) Cohort member spare time activities: Goes to a museum of any kind – Age 10: (Base case: Rarely or never)									
Sometimes	-	-	0.340***	-	-	0.215	-	-	0.435***
	-	-	*(0.088)*	-	-	*(0.131)*	-	-	*(0.121)*
Often	-	-	0.216	-	-	0.177	-	-	0.299
	-	-	*(0.213)*	-	-	*(0.295)*	-	-	*(0.319)*
(Parent) Cohort member spare time activities: Reads books – Age 10 (Base case: Never or hardly ever)									
Sometimes	-	-	-0.358*	-	-	-0.420*	-	-	0.093
	-	-	*(0.212)*	-	-	*(0.246)*	-	-	*(0.469)*
Often	-	-	-0.271	-	-	-0.391	-	-	0.248
	-	-	*(0.214)*	-	-	*(0.254)*	-	-	*(0.467)*
(Parent) Cohort member spare time activities: Goes to the library – Age 10: (Base case: Never or hardly ever)									
Sometimes	-	-	0.153	-	-	0.093	-	-	0.217
	-	-	*(0.118)*	-	-	*(0.157)*	-	-	*(0.183)*
Often	-	-	0.250**	-	-	0.204	-	-	0.315*
	-	-	*(0.125)*	-	-	*(0.174)*	-	-	*(0.186)*
(Parent) Children's skills: Reads comics and magazines – Age 10: (Base case: Tercile 1)									
Tercile 2	-	-	0.036	-	-	-0.091	-	-	0.083
	-	-	*(0.095)*	-	-	*(0.138)*	-	-	*(0.132)*
Tercile 3	-	-	0.087	-	-	0.037	-	-	0.242*
	-	-	*(0.101)*	-	-	*(0.154)*	-	-	*(0.146)*
(Parent) Spare time activities: Listens to the radio - Age 10: (Base case: Never or hardly ever)									
Sometimes	-	-	-0.281***	-	-	-0.137	-	-	-0.448***
	-	-	*(0.094)*	-	-	*(0.138)*	-	-	*(0.132)*
Often	-	-	-0.325***	-	-	-0.224	-	-	-0.466***
	-	-	*(0.114)*	-	-	*(0.172)*	-	-	*(0.159)*
SOCIAL CAPITAL VARIABLES									
(Parent) Scale: Child's behaviour - Does things on own-rather solitary - Age 10: (Base case: Tercile 1)									
Tercile 2	-	-	-0.148	-	-	-0.215	-	-	-0.089
	-	-	*(0.098)*	-	-	*(0.142)*	-	-	*(0.136)*
Tercile 3	-	-	-0.086	-	-	-0.111	-	-	-0.018
	-	-	*(0.097)*	-	-	*(0.146)*	-	-	*(0.137)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Parent) Activities on own: Plays in the streets – Age 10 (Base case: Never, seldom)									
Seldom	-	-	-0.254**	-	-	-0.021	-	-	-0.435***
	-	-	*(0.104)*	-	-	*(0.159)*	-	-	*(0.142)*
About once a week	-	-	-0.261*	-	-	-0.139	-	-	-0.303
	-	-	*(0.142)*	-	-	*(0.222)*	-	-	*(0.191)*
Almost every day	-	-	-0.390***	-	-	-0.257*	-	-	-0.460***
	-	-	*(0.098)*	-	-	*(0.144)*	-	-	*(0.138)*
(Parent) Spare time activities: Goes to a club or organisation – Age 10 (Base case: Never or hardly ever)									
Sometimes	-	-	-0.223*	-	-	-0.353**	-	-	-0.138
	-	-	*(0.122)*	-	-	*(0.180)*	-	-	*(0.172)*
Often	-	-	-0.123	-	-	-0.074	-	-	-0.184
	-	-	*(0.098)*	-	-	*(0.140)*	-	-	*(0.143)*
(Parent) Spare time activities: Sports – Age 10 (Base case: Never or hardly ever)									
Sometimes	-	-	0.130	-	-	-0.038	-	-	0.166
	-	-	*(0.157)*	-	-	*(0.293)*	-	-	*(0.190)*
Often	-	-	0.057	-	-	-0.218	-	-	0.206
	-	-	*(0.159)*	-	-	*(0.289)*	-	-	*(0.196)*
(Teacher) Scale: Perceived Social Networks of Cohort Member – Age 10 (Base case: Tercile 1)									
Tercile 2	-	-	-0.092	-	-	-0.221	-	-	0.022
	-	-	*(0.098)*	-	-	*(0.143)*	-	-	*(0.137)*
Tercile 3	-	-	0.076	-	-	-0.030	-	-	0.208
	-	-	*(0.101)*	-	-	*(0.148)*	-	-	*(0.139)*
CONSTANT									
Constant	-1.693***	-1.818***	-1.194***	-1.593***	-1.660***	-0.448	-1.795***	-1.889***	-2.184***
	(0.251)	*(0.255)*	*(0.442)*	*(0.392)*	*(0.395)*	*(0.649)*	*(0.338)*	*(0.342)*	*(0.726)*

8.7 (Continued)

	Empirical Estimations								
	Sample			**Male subsample**			**Female subsample**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
BCS70	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
REGRESSION STATISTICS									
n.	5,244	5,244	5,244	2,454	2,454	2,454	2,790	2,790	2,790
Log pseudo-likelihood	-2,175.38	-2,162.58	-2,141.65	-1,016.21	-1,010.42	-999.82	-1,140.83	-1,128.26	-1,109.18
Pseudo R^2	0.2533	0.2577	0.2648	0.2543	0.2585	0.2663	0.2642	0.2723	0.2846
LR X^2	(40)	(46)	(65)	(39)	(45)	(64)	(39)	(45)	(64)
	1475.65	1501.25	1543.12	692.94	704.51	725.71	819.39	844.53	882.68
Prob > X^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Iterations	5	5	5	5	5	5	5	5	5
GOODNESS-OF-FIT TESTS									
Pearson goodness-of-fit test									
n. covariance patterns	5244	5244	5244	2454	2454	2454	2790	2790	2790
Pearson X^2	(5,203)	(5,197)	(5,178)	(2,414)	(2,408)	(2,389)	(2,750)	(2,744)	(2,725)
	5,056.32	5,105.92	5,102.96	2,369.24	2,379.83	2,393.16	2,647.55	2,651.17	2,650.90
Prob > X^2	0.9258	0.8138	0.7687	0.7384	0.6546	0.4722	0.9177	0.8959	0.8423
Hosmer-Lemeshow goodness-of-fit test									
Groups	10	10	10	10	10	10	10	10	10
H-L X^2	9.44	5.96	4.06	7.21	3.75	5.12	8.14	11.34	12.83
Prob > X^2	0.3064	0.6519	0.8516	0.5144	0.8793	0.7447	0.4197	0.1830	0.1179
Stukel test									
X^2	3.23	2.61	3.10	2.61	2.98	2.51	3.35	4.28	3.82
Prob > X^2	0.1992	0.2711	0.2123	0.2708	0.2255	0.2855	0.1877	0.1179	0.1479
Linktest									
_hat P > |z|	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
__hatsq P > |z|	0.295	0.279	0.207	0.851	0.913	0.932	0.136	0.081	0.102
Akaike and Bayesian Information Criterions									
Log-likelihood (Null)	-2,913.21	-2,913.21	-2,913.21	-1,362.68	-1,362.68	-1,362.68	-1,550.53	-1,550.53	-1,550.53
Log-likelihood (Model)	-2,175.38	-2,162.58	-2,141.65	-1,016.21	-1,010.43	-999.82	-1,140.83	-1,128.26	-1,109.18
Degrees of freedom	41	47	66	40	46	65	40	46	65
AIC	4,432.77	4,419.16	4,415.29	2,112.41	2,112.85	2,129.64	2,361.67	2,348.52	2,348.37
BIC	4,701.93	4,727.71	4,848.57	2,344.63	2,379.90	2,507.00	2,599.02	2,621.47	2,734.07

8.7 (Continued)

Likelihood Ratio Test				
(1) < (2)	LR X^2	25.61	11.56	25.15
	Prob > X^2	0.0003	0.0724	0.0003
(1) < (3)	LR X^2	67.48	32.77	63.30
	Prob > X^2	0.0000	0.1369	0.0000

[* $p \leq 0.10$, ** $0.01 < p \leq 0.05$, *** $p \leq 0.01$]

8.8 Marginal effects at representative values computed from our preferred logistic regression output that estimates the influences on Higher Education participation by age 33 and 34 for our estimation sample using the National Child Development Study and British Cohort Study 1970 respectively

	Marginal Effects at Representative Values	
	NCDS dy/dx (*) *(s.e.)*	**BCS70** dy/dx (*) *(s.e.)*
Gender (Base case: Females)		
Male	0.022	0.007
	(0.006)	*(0.012)*
Septiles of weekly household income £ – Age 16: (Base case: Septile 1)		
Septile 2	-0.002	0.009
	(0.010)	*(0.031)*
Septile 3	-0.004	0.029
	(0.012)	*(0.032)*
Septile 4	-0.005	0.049
	(0.010)	*(0.026)*
Septile 5	-0.007	0.078
	(0.009)	*(0.039)*
Septile 6	0.006	0.109
	(0.011)	*(0.042)*
Septile 7	0.021	0.158
	(0.014)	*(0.049)*
Not answered	-0.004	-
	(0.010)	-
Data incomplete	-0.014	-
	(0.009)	-
Not stated	-	0.043
	-	*(0.031)*
No questionnaire	-	0.054
	-	*(0.034)*
Father's occupational social class - Age 10: (Base case: Skilled manual)		
Professional	0.080	0.190
	(0.022)	*(0.037)*
Intermediate	0.027	0.061
	(0.009)	*(0.018)*
Skilled non-manual	0.021	0.018
	(0.010)	*(0.022)*
Semiskilled	-0.009	-0.016
	(0.008)	*(0.022)*
Unskilled	-0.006	-0.109
	(0.014)	*(0.033)*
Not applicable	0.036	-
	(0.027)	-
Insufficient information	-	0.017
	-	*(0.047)*
No data	-	0.041
	-	*(0.029)*
Mother's age at which she left full-time education - Age 16: (Base case: 15 to 16 years)		
x < 15	-0.006	0.018
	(0.006)	*(0.036)*
17 ≤ x < 19	0.010	0.061
	(0.009)	*(0.023)*
x ≥ 19	0.056	0.164
	(0.023)	*(0.037)*
Not answered	0.012	-
	(0.019)	-
Not stated	-	0.073
	-	*(0.042)*
No questionnaire	-	-0.029
	-	*(0.014)*

8.8 (Continued)

	Marginal Effects at Representative Values	
	NCDS dy/dx (*) *(s.e.)*	**BCS70** dy/dx (*) *(s.e.)*
Government Office Region - Age 10: (Base case: South East)		
North	0.007	0.013
	(0.011)	*(0.026)*
York & the Humber	-	0.016
	-	*(0.023)*
North West	0.005	0.023
	(0.009)	*(0.022)*
East & West Riding	0.017	-
	(0.011)	-
North Midlands	-0.005	-
	(0.009)	-
Midlands	-0.004	-
	(0.009)	-
East Midlands	-	-0.022
	-	*(0.024)*
West Midlands	-	0.044
	-	*(0.024)*
East	-0.016	-
	(0.008)	-
East Anglia	-	0.011
	-	*(0.030)*
South	-0.008	-
	(0.009)	-
South West	0.009	-0.031
	(0.011)	*(0.024)*
Wales	0.025	0.052
	(0.014)	*(0.031)*
Scotland	0.015	0.046
	(0.011)	*(0.023)*
Number of siblings – Age 16: (Base case: None)		
1	-0.002	-0.035
	(0.010)	*(0.031)*
2	-0.010	-0.052
	(0.008)	*(0.023)*
3	-0.006	-0.056
	(0.009)	*(0.029)*
4	-0.016	0.050
	(0.010)	*(0.059)*
5 or more	-0.008	0.060
	(0.012)	*(0.068)*
Not answered	-0.008	-
	(0.015)	-
Data incomplete	-0.017	-
	(0.020)	-
Not stated	-	-0.097
	-	*(0.025)*
No questionnaire	-	-0.088
	-	*(0.019)*
Unclear	-	-0.063
	-	*(0.023)*
Cognitive ability		
1st Order	0.081	0.156
	(0.017)	*(0.019)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS		
Cultural Capital		
Cultural Participation	0.000	0.016
	(0.002)	*(0.006)*
Interest in Literature	0.013	-
	(0.004)	-
Extended Literary Works	-	0.009
	-	*(0.006)*
Engagement in Media	-0.008	-0.002
	(0.003)	*(0.006)*

8.8 (Continued)

	Marginal Effects at Representative Values	
	NCDS dy/dx (*) *(s.e.)*	**BCS70** dy/dx (*) *(s.e.)*
Social Capital		
Social Participation	-0.006	-
	(0.002)	-
Outgoing	-	-0.025
	-	*(0.007)*
Structured Participation	0.001	-0.003
	(0.002)	*(0.006)*
Introversion	-0.001	-
	(0.002)	-
Social Independence	-	-0.002
	-	*(0.006)*
n.	6,306	5,244

8.9 Principal Components Analysis summary: descriptive statistics and component matrices for our Key Skill principal components *(KS_i)* - A proxy for cognitive ability

		PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		7,215	4,817	2,319	2,498
n. variables		12	12	12	12
Determinant of the correlation matrix*		0.001	0.001	0.001	0.001
Kaiser-Meyer-Olkin statistic**		0.912	0.910	0.911	0.914
Individual Kaiser-Meyer-Olkin statistics***		≥ 0.808	≥ 0.815	≥0.819	≥0.797
Bartlett's Test of Sphericity	Approx. Chi-Square	54,474.639	35,154.984	17,478.143	17,882.909
	d.f.	66	66	66	66
	Sig.	0.000	0.000	0.000	0.000
Rotation		Direct Oblimin	Direct Oblimin	Direct Oblimin	Direct Oblimin
Number of components extracted		3	3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		70.287	69.684	70.398	68.961
Eigenvalue****		1.037	1.036	1.021	0.922
Percentage of non-redundant residuals > 0.05*****		33%	31%	36%	36%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern

8.9 (Continued)

	Pattern Matrices		
LSYPE	**Technical Skill**	**Gifted & Talented**	**Literacy Skill**
Sweep 1 participants			
KS2 English test - Writing score	0.352	0.064	0.583
KS2 English test - Reading score	0.703	0.030	0.252
KS2 English test - Handwriting score	-0.103	-0.003	0.893
KS2 English test - Spelling score	0.433	0.022	0.489
KS2 Mathematics test - Paper 1 score	0.884	0.042	0.025
KS2 Mathematics test - Paper 2 score	0.916	0.029	-0.036
KS2 Mathematics test - Mental arithmetic score	0.858	0.015	0.013
KS2 Science test - Paper A score	0.889	-0.015	-0.064
KS2 Science test - Paper B score	0.904	-0.019	-0.064
KS2 English - Extension paper attempted	-0.081	0.774	0.147
KS2 Mathematics - Extension paper attempted	0.111	0.737	-0.059
KS2 Science - Extension paper attempted	-0.018	0.780	-0.087
Component	(1)	(2)	(3)
Sample			
KS2 English test - Writing score	0.297	0.077	0.612
KS2 English test - Reading score	0.666	0.021	0.295
KS2 English test - Handwriting score	-0.108	-0.007	0.880
KS2 English test - Spelling score	0.413	0.021	0.493
KS2 Mathematics test - Paper 1 score	0.878	0.044	0.030
KS2 Mathematics test - Paper 2 score	0.915	0.032	-0.042
KS2 Mathematics test - Mental arithmetic score	0.855	0.014	0.007
KS2 Science test - Paper A score	0.870	-0.011	-0.042
KS2 Science test - Paper B score	0.895	-0.018	-0.055
KS2 English - Extension paper attempted	-0.085	0.783	0.155
KS2 Mathematics - Extension paper attempted	0.125	0.741	-0.070
KS2 Science - Extension paper attempted	-0.024	0.787	-0.078
Component	(1)	(2)	(3)
Male subsample			
KS2 English test - Writing score	0.375	0.102	0.517
KS2 English test - Reading score	0.747	0.038	0.177
KS2 English test - Handwriting score	-0.092	-0.018	0.900
KS2 English test - Spelling score	0.398	0.043	0.517
KS2 Mathematics test - Paper 1 score	0.845	0.046	0.085
KS2 Mathematics test - Paper 2 score	0.891	0.024	0.019
KS2 Mathematics test - Mental arithmetic score	0.805	-0.003	0.119
KS2 Science test - Paper A score	0.915	-0.002	-0.141
KS2 Science test - Paper B score	0.931	-0.025	-0.121
KS2 English - Extension paper attempted	-0.089	0.793	0.089
KS2 Mathematics - Extension paper attempted	0.082	0.756	0.012
KS2 Science - Extension paper attempted	0.007	0.788	-0.120
Component	(1)	(2)	(3)
Female subsample			
KS2 English test - Writing score	0.389	0.065	0.508
KS2 English test - Reading score	0.724	0.011	0.207
KS2 English test - Handwriting score	-0.061	0.014	0.894
KS2 English test - Spelling score	0.515	0.001	0.371
KS2 Mathematics test - Paper 1 score	0.891	0.037	-0.001
KS2 Mathematics test - Paper 2 score	0.907	0.033	-0.049
KS2 Mathematics test - Mental arithmetic score	0.860	0.022	-0.011
KS2 Science test - Paper A score	0.884	-0.018	-0.072
KS2 Science test - Paper B score	0.889	-0.011	-0.061
KS2 English - Extension paper attempted	-0.019	0.797	0.106
KS2 Mathematics - Extension paper attempted	0.127	0.726	-0.105
KS2 Science - Extension paper attempted	-0.082	0.779	-0.002
Component	(1)	(2)	(3)

8.9 (Continued)

	Structure Matrices		
LSYPE	**Technical Skill**	**Gifted & Talented**	**Literacy Skill**
Sweep 1 participants			
KS2 English test - Writing score	0.615	0.275	0.741
KS2 English test - Reading score	0.817	0.292	0.550
KS2 English test - Handwriting score	0.268	0.122	0.849
KS2 English test - Spelling score	0.644	0.242	0.673
KS2 Mathematics test - Paper 1 score	0.907	0.320	0.401
KS2 Mathematics test - Paper 2 score	0.910	0.306	0.351
KS2 Mathematics test - Mental arithmetic score	0.868	0.283	0.374
KS2 Science test - Paper A score	0.858	0.249	0.304
KS2 Science test - Paper B score	0.872	0.250	0.310
KS2 English - Extension paper attempted	0.220	0.775	0.249
KS2 Mathematics - Extension paper attempted	0.314	0.761	0.116
KS2 Science - Extension paper attempted	0.187	0.759	0.042
Component	(1)	(2)	(3)
Sample			
KS2 English test - Writing score	0.584	0.286	0.754
KS2 English test - Reading score	0.800	0.290	0.585
KS2 English test - Handwriting score	0.267	0.122	0.832
KS2 English test - Spelling score	0.631	0.245	0.674
KS2 Mathematics test - Paper 1 score	0.904	0.332	0.414
KS2 Mathematics test - Paper 2 score	0.908	0.319	0.356
KS2 Mathematics test - Mental arithmetic score	0.862	0.291	0.376
KS2 Science test - Paper A score	0.848	0.261	0.328
KS2 Science test - Paper B score	0.865	0.259	0.325
KS2 English - Extension paper attempted	0.233	0.784	0.264
KS2 Mathematics - Extension paper attempted	0.333	0.768	0.121
KS2 Science - Extension paper attempted	0.196	0.764	0.057
Component	(1)	(2)	(3)
Male subsample			
KS2 English test - Writing score	0.622	0.326	0.691
KS2 English test - Reading score	0.833	0.321	0.491
KS2 English test - Handwriting score	0.272	0.124	0.859
KS2 English test - Spelling score	0.625	0.274	0.689
KS2 Mathematics test - Paper 1 score	0.895	0.343	0.441
KS2 Mathematics test - Paper 2 score	0.906	0.323	0.389
KS2 Mathematics test - Mental arithmetic score	0.853	0.288	0.449
KS2 Science test - Paper A score	0.857	0.275	0.235
KS2 Science test - Paper B score	0.873	0.261	0.256
KS2 English - Extension paper attempted	0.211	0.780	0.204
KS2 Mathematics - Extension paper attempted	0.338	0.786	0.191
KS2 Science - Extension paper attempted	0.220	0.767	0.034
Component	(1)	(2)	(3)
Female subsample			
KS2 English test - Writing score	0.622	0.272	0.681
KS2 English test - Reading score	0.815	0.276	0.511
KS2 English test - Handwriting score	0.316	0.142	0.871
KS2 English test - Spelling score	0.670	0.226	0.586
KS2 Mathematics test - Paper 1 score	0.903	0.321	0.377
KS2 Mathematics test - Paper 2 score	0.897	0.314	0.335
KS2 Mathematics test - Mental arithmetic score	0.862	0.294	0.352
KS2 Science test - Paper A score	0.848	0.251	0.294
KS2 Science test - Paper B score	0.860	0.262	0.308
KS2 English - Extension paper attempted	0.279	0.808	0.229
KS2 Mathematics - Extension paper attempted	0.314	0.750	0.068
KS2 Science - Extension paper attempted	0.166	0.753	0.092
Component	(1)	(2)	(3)

8.10 Principal Components Analysis summary: descriptive statistics and component matrices for our Cultural Capital principal components (CC_i)

		PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		7,820	4,817	2,319	2,498
n. variables		3	3	3	3
Determinant of the correlation matrix*		0.954	0.959	0.963	0.957
Kaiser-Meyer-Olkin statistic**		0.560	0.555	0.553	0.546
Individual Kaiser-Meyer-Olkin statistics***		≥0.556	≥0.550	≥0.548	≥0.534
Bartlett's Test of Sphericity	Approx. Chi-Square	366.997	200.215	88.230	110.181
	d.f.	3	3	3	3
	Sig.	0.000	0.000	0.000	0.000
Rotation		N/A	N/A	N/A	N/A
Number of components extracted		1	1	1	1
Scores method		Regression	Regression	Regression	Regression
Cumulative variance explained		41.942	41.404	41.049	41.448
Eigenvalue****		1.258	1.242	1.231	1.243
Percentage of non-redundant residuals > 0.05*****		100%	100%	100%	100%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

	Component Matrices			
LSYPE	**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
(Young Person) Frequency of reading for pleasure	0.650	0.649	0.652	0.628
(Young Person) Whether been to or done in last 4 weeks: Gone to a cinema, theatre or concert	0.631	0.616	0.611	0.590
(Young Person) Whether been to or done in last 4 weeks: Played a musical instrument	0.662	0.665	0.658	0.708

8.11 Principal Components Analysis summary: descriptive statistics and component matrices for our Habitus principal components (*HAB*)

		PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		6,561	4,817	2,319	2,498
n. variables		8	8	8	8
Determinant of the correlation matrix*		0.194	0.195	0.174	0.213
Kaiser-Meyer-Olkin statistic**		0.772	0.769	0.790	0.755
Individual Kaiser-Meyer-Olkin statistics***		≥0.710	≥0.692	≥0.741	≥0.658
Bartlett's Test of Sphericity	Approx. Chi-Square	10,765.854	7,870.862	4,053.734	3,855.655
	d.f.	28	28	28	28
	Sig.	0.000	0.000	0.000	0.000
Rotation		Direct Oblimin	Direct Oblimin	Direct Oblimin	Direct Oblimin
Number of components extracted		2	2	2	2
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		49.142	49.001	49.840	47.852
Eigenvalue****		1.061	1.073	1.009	1.070
Percentage of non-redundant residuals > 0.05*****		75%	75%	71%	75%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb,

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.11 (Continued)

	Pattern Matrices	
LSYPE	Academic Self-Perception	Aspirations for Further Study
Sweep 1 participants		
(Young Person) Young person's intentions after Year 11	-0.182	0.887
(Young Person) Likelihood of young person getting into university if apply	0.203	0.707
(Young Person) How good young person thinks young person is at school work	0.770	0.189
(Young Person) How good teachers think young person is at school work	0.740	0.179
(Young Person) How good or bad at this subject: Mathematics	0.628	0.009
(Young Person) How good or bad at this subject: English	0.295	0.373
(Young Person) How good or bad at this subject: Science	0.582	-0.004
(Young Person) How good or bad at this subject: ICT	0.458	-0.137
Component	(1)	(2)
Sample		
(Young Person) Young person's intentions after Year 11	-0.176	0.880
(Young Person) Likelihood of young person getting into university if apply	0.227	0.699
(Young Person) How good young person thinks young person is at school work	0.773	0.193
(Young Person) How good teachers think young person is at school work	0.746	0.188
(Young Person) How good or bad at this subject: Mathematics	0.611	0.023
(Young Person) How good or bad at this subject: English	0.316	0.337
(Young Person) How good or bad at this subject: Science	0.602	-0.029
(Young Person) How good or bad at this subject: ICT	0.459	-0.156
Component	(1)	(2)
Male subsample		
(Young Person) Young person's intentions after Year 11	-0.137	0.926
(Young Person) Likelihood of young person getting into university if apply	0.230	0.699
(Young Person) How good young person thinks young person is at school work	0.818	0.080
(Young Person) How good teachers think young person is at school work	0.826	0.031
(Young Person) How good or bad at this subject: Mathematics	0.618	0.005
(Young Person) How good or bad at this subject: English	0.357	0.249
(Young Person) How good or bad at this subject: Science	0.608	-0.077
(Young Person) How good or bad at this subject: ICT	0.386	-0.029
Component	(1)	(2)
Female subsample		
(Young Person) Young person's intentions after Year 11	-0.133	0.931
(Young Person) Likelihood of young person getting into university if apply	0.351	0.594
(Young Person) How good young person thinks young person is at school work	0.854	-0.017
(Young Person) How good teachers think young person is at school work	0.842	-0.049
(Young Person) How good or bad at this subject: Mathematics	0.509	0.125
(Young Person) How good or bad at this subject: English	0.574	-0.082
(Young Person) How good or bad at this subject: Science	0.555	0.003
(Young Person) How good or bad at this subject: ICT	0.287	0.020
Component	(1)	(2)

8.11 (Continued)

	Structure Matrices	
LSYPE	**Academic Self-Perception**	**Aspirations for Further Study**
Sweep 1 participants		
(Young Person) Young person's intentions after Year 11	0.064	0.836
(Young Person) Likelihood of young person getting into university if apply	0.400	0.764
(Young Person) How good young person thinks young person is at school work	0.823	0.403
(Young Person) How good teachers think young person is at school work	0.790	0.385
(Young Person) How good or bad at this subject: Mathematics	0.631	0.183
(Young Person) How good or bad at this subject: English	0.399	0.455
(Young Person) How good or bad at this subject: Science	0.581	0.157
(Young Person) How good or bad at this subject: ICT	0.420	-0.010
Component	(1)	(2)
Sample		
(Young Person) Young person's intentions after Year 11	0.045	0.836
(Young Person) Likelihood of young person getting into university if apply	0.403	0.756
(Young Person) How good young person thinks young person is at school work	0.822	0.387
(Young Person) How good teachers think young person is at school work	0.793	0.375
(Young Person) How good or bad at this subject: Mathematics	0.617	0.177
(Young Person) How good or bad at this subject: English	0.400	0.417
(Young Person) How good or bad at this subject: Science	0.595	0.122
(Young Person) How good or bad at this subject: ICT	0.420	-0.041
Component	(1)	(2)
Male subsample		
(Young Person) Young person's intentions after Year 11	0.198	0.876
(Young Person) Likelihood of young person getting into university if apply	0.483	0.782
(Young Person) How good young person thinks young person is at school work	0.847	0.377
(Young Person) How good teachers think young person is at school work	0.837	0.330
(Young Person) How good or bad at this subject: Mathematics	0.620	0.229
(Young Person) How good or bad at this subject: English	0.447	0.378
(Young Person) How good or bad at this subject: Science	0.580	0.143
(Young Person) How good or bad at this subject: ICT	0.375	0.111
Component	(1)	(2)
Female subsample		
(Young Person) Young person's intentions after Year 11	0.117	0.895
(Young Person) Likelihood of young person getting into university if apply	0.510	0.688
(Young Person) How good young person thinks young person is at school work	0.850	0.212
(Young Person) How good teachers think young person is at school work	0.828	0.177
(Young Person) How good or bad at this subject: Mathematics	0.542	0.261
(Young Person) How good or bad at this subject: English	0.552	0.072
(Young Person) How good or bad at this subject: Science	0.554	0.146
(Young Person) How good or bad at this subject: ICT	0.292	0.097
Component	(1)	(2)

8.12 Principal Components Analysis summary: descriptive statistics and component matrices for our Social Capital principal components – young person networks *($SCYPNET_i$)*

		PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		7,802	4,817	2,319	2,498
n. variables		7	7	7	7
Determinant of the correlation matrix*		0.581	0.588	0.633	0.528
Kaiser-Meyer-Olkin statistic**		0.635	0.635	0.634	0.642
Individual Kaiser-Meyer-Olkin statistics***		≥0.547	≥0.518	≥0.507	≥0.578
Bartlett's Test of Sphericity	Approx. Chi-Square	4,230.191	2,555.739	1,057.761	1,594.461
	d.f.	21	21	21	21
	Sig.	0.000	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax	Varimax
Number of components extracted		2	2	2	2
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		42.538	42.273	41.794	43.466
Eigenvalue****		1.084	1.076	1.093	1.079
Percentage of non-redundant residuals > 0.05*****		76%	71%	71%	61%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.12 (Continued)

	Rotated Component Matrices	
LSYPE	**Outgoing**	**Social Participation**
Sweep 1 participants		
(Young Person) Frequency of doing sports	0.206	0.310
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.350	0.266
(Young Person) Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.082	0.628
(Young Person) Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.012	0.740
(Young Person) How many times young person had friends round to house in last 7 days	0.762	0.015
(Young Person) How many times gone out with friends in last 7 days	0.823	0.099
(Young Person) Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.652	-0.055
Component	(1)	(2)
Sample		
(Young Person) Frequency of doing sports	0.231	0.206
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.375	0.193
(Young Person) Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.045	0.682
(Young Person) Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	-0.056	0.730
(Young Person) How many times young person had friends round to house in last 7 days	0.763	0.004
(Young Person) How many times gone out with friends in last 7 days	0.827	0.046
(Young Person) Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.635	-0.101
Component	(1)	(2)
Male subsample		
(Young Person) Frequency of doing sports	0.364	0.056
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.302	0.407
(Young Person) Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.117	0.669
(Young Person) Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.037	0.699
(Young Person) How many times young person had friends round to house in last 7 days	0.732	0.016
(Young Person) How many times gone out with friends in last 7 days	0.810	0.069
(Young Person) Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.618	-0.057
Component	(1)	(2)
Female subsample		
(Young Person) Frequency of doing sports	0.074	0.454
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.430	0.259
(Young Person) Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.018	0.576
(Young Person) Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.017	0.700
(Young Person) How many times young person had friends round to house in last 7 days	0.783	0.038
(Young Person) How many times gone out with friends in last 7 days	0.841	0.059
(Young Person) Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.649	-0.098
Component	(1)	(2)

8.13 Principal Components Analysis summary: descriptive statistics and component matrices for our Social Capital principal components at home *($SCHM_i$)*

		PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		6,240	4,817	2,319	2,498
n. variables		9	9	9	9
Determinant of the correlation matrix*		0.637	0.628	0.661	0.577
Kaiser-Meyer-Olkin statistic**		0.704	0.701	0.668	0.722
Individual Kaiser-Meyer-Olkin statistics***		≥0.598	≥0.568	≥0.561	≥0.549
Bartlett's Test of Sphericity	Approx. Chi-Square	2,807.891	2,239.201	956.803	1,372.566
	d.f.	36	36	36	36
	Sig.	0.000	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax	Varimax
Number of components extracted		3	3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		45.536	46.032	45.510	47.165
Eigenvalue****		1.020	1.046	1.045	1.047
Percentage of non-redundant residuals > 0.05*****		69%	63%	50%	69%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb,

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.13 (Continued)

	Rotated Components Matrix		
LSYPE	**Parent-Child Connectivity**	**Parental Aspirations for Young Person**	**Parent-Child Concurrence**
Sweep 1 participants			
(Main Parent) What would like young person to do when reach school leaving age	-0.122	0.725	-0.197
(Young Person) How often talk about plans for future study with - Members of family	0.679	0.059	-0.033
(Young Person) Whether anyone at home makes sure that do homework	0.549	0.006	0.009
(Young Person) How often parents know where going when out in evening	0.153	0.582	0.207
(Young Person) How often parents talk to young person about day at school	0.577	0.265	0.080
(Main Parent) How well get on with young person	-0.053	0.028	0.725
(Young Person) How well do you get on with your parents	0.078	0.081	0.714
(Young Person) How often do talk of things that are important to you with your parents	0.725	0.041	0.058
(Young Person) How many times eaten evening meal with family in last 7 days	0.207	0.544	0.127
Component	(1)	(2)	(3)
Sample			
(Main Parent) What would like young person to do when reach school leaving age	-0.157	0.722	-0.098
(Young Person) How often talk about plans for future study with - Members of family	0.668	0.051	-0.023
(Young Person) Whether anyone at home makes sure that do homework	0.543	0.020	-0.013
(Young Person) How often parents know where going when out in evening	0.187	0.568	0.137
(Young Person) How often parents talk to young person about day at school	0.573	0.261	0.073
(Main Parent) How well get on with young person	-0.059	0.054	0.768
(Young Person) How well do you get on with your parents	0.110	0.028	0.742
(Young Person) How often do talk of things that are important to you with your parents	0.726	0.046	0.085
(Young Person) How many times eaten evening meal with family in last 7 days	0.223	0.561	0.058
Component	(1)	(2)	(3)
Male subsample			
(Main Parent) What would like young person to do when reach school leaving age	-0.124	0.682	0.010
(Young Person) How often talk about plans for future study with - Members of family	0.679	-0.008	-0.079
(Young Person) Whether anyone at home makes sure that do homework	0.532	0.086	0.064
(Young Person) How often parents know where going when out in evening	0.131	0.640	0.007
(Young Person) How often parents talk to young person about day at school	0.549	0.245	0.079
(Main Parent) How well get on with young person	0.024	0.043	0.762
(Young Person) How well do you get on with your parents	0.041	0.025	0.772
(Young Person) How often do talk of things that are important to you with your parents	0.747	-0.009	0.037
(Young Person) How many times eaten evening meal with family in last 7 days	0.224	0.515	0.065
Component	(1)	(2)	(3)

8.13 (Continued)

	Rotated Components Matrix		
LSYPE	**Parent-Child Connectivity**	**Parental Aspirations for Young Person**	**Parent-Child Concurrence**
Female subsample			
(Main Parent) What would like young person to do when reach school leaving age	-0.174	0.732	-0.138
(Young Person) How often talk about plans for future study with - Members of family	0.652	0.059	0.046
(Young Person) Whether anyone at home makes sure that do homework	0.566	0.006	-0.096
(Young Person) How often parents know where going when out in evening	0.254	0.493	0.217
(Young Person) How often parents talk to young person about day at school	0.594	0.275	0.055
(Main Parent) How well get on with young person	-0.115	0.044	0.762
(Young Person) How well do you get on with your parents	0.162	0.021	0.723
(Young Person) How often do talk of things that are important to you with your parents	0.713	0.047	0.132
(Young Person) How many times eaten evening meal with family in last 7 days	0.236	0.614	0.067
Component	(1)	(2)	(3)

8.14 Principal Components Analysis summary: descriptive statistics and component matrices for our Social Capital principal components at school *($SCSCH_i$)*

		Social Capital at school PCA Descriptive Statistics			
LSYPE		**Sweep 1 participants**	**Sample**	**Male subsample**	**Female subsample**
n. observations		7,422	4,817	2,319	2,498
n. variables		10	10	10	10
Determinant of the correlation matrix*		0.679	0.699	0.672	0.703
Kaiser-Meyer-Olkin statistic**		0.567	0.558	0.556	0.555
Individual Kaiser-Meyer-Olkin statistics***		≥0.536	≥0.523	≥0.490	≥0.518
Bartlett's Test of Sphericity	Approx. Chi-Square	2,877.485	1,724.526	919.216	880.078
	d.f.	45	45	45	45
	Sig.	0.000	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax	Varimax
Number of components extracted		4	4	4	4
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		51.621	51.239	51.799	51.269
Eigenvalue****		1.014	1.025	1.019	1.048
Percentage of non-redundant residuals > 0.05*****		44%	48%	48%	57%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.14 (Continued)

	Rotated Component Matrices			
LSYPE	Parent-School Connectivity	Parental Assessment of Schooling	Parent-school participation	Parental involvement in school governance
Sweep 1 participants				
(Young Person) How many of young person's teachers who set homework make sure young person does it	-0.261	0.552	0.065	-0.100
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling	0.784	-0.088	-0.035	-0.013
(Main Parent) How often speak to young person's teachers about schooling	0.791	-0.002	0.109	0.019
(Main Parent) Satisfaction with: how much interest the teachers show in young person	-0.066	0.736	0.004	0.005
(Main Parent) How involved does main parent personally feel in young person's school life	0.380	0.647	0.031	0.106
(Main Parent) Frequency of main parent talking to young person about report	-0.006	0.197	-0.054	0.150
(Main Parent) Activities they or partner get involved in: Help out in class	0.044	0.000	0.765	0.041
(Main Parent) Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	0.018	0.005	0.768	0.056
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations	0.019	0.069	0.239	0.634
(Main Parent) Activities they or partner get involved in: School, parent governor	0.010	-0.023	-0.065	0.823
Component	(1)	(2)	(3)	(4)
Sample				
(Young Person) How many of young person's teachers who set homework make sure young person does it	-0.238	0.556	0.047	-0.184
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling	0.782	-0.112	-0.027	-0.051
(Main Parent) How often speak to young person's teachers about schooling	0.786	-0.021	0.102	-0.005
(Main Parent) Satisfaction with: how much interest the teachers show in young person	-0.071	0.755	-0.006	0.088
(Main Parent) How involved does main parent personally feel in young person's school life	0.376	0.633	-0.009	0.179
(Main Parent) Frequency of main parent talking to young person about report	-0.040	0.040	-0.106	0.359
(Main Parent) Activities they or partner get involved in: Help out in class	0.079	0.026	0.758	-0.051
(Main Parent) Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	-0.016	-0.001	0.745	0.048
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations	0.015	0.027	0.329	0.580
(Main Parent) Activities they or partner get involved in: School, parent governor	0.031	-0.037	-0.005	0.761
Component	(1)	(2)	(3)	(4)

8.14 (Continued)

	Rotated Component Matrices			
LSYPE	**Parent-School Connectivity**	**Parental Assessment of Schooling**	**Parent-school participation**	**Parental involvement in school governance**
Male subsample				
(Young Person) How many of young person's teachers who set homework make sure young person does it	-0.286	0.485	0.144	-0.129
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling	0.788	-0.063	-0.010	-0.063
(Main Parent) How often speak to young person's teachers about schooling	0.788	0.012	0.116	0.044
(Main Parent) Satisfaction with: how much interest the teachers show in young person	-0.104	0.756	-0.026	0.079
(Main Parent) How involved does main parent personally feel in young person's school life	0.331	0.697	-0.065	0.104
(Main Parent) Frequency of main parent talking to young person about report	-0.032	0.065	-0.258	0.270
(Main Parent) Activities they or partner get involved in: Help out in class	0.055	0.032	0.727	0.141
(Main Parent) Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	0.004	0.030	0.752	0.041
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations	-0.001	0.026	0.123	0.740
(Main Parent) Activities they or partner get involved in: School, parent governor	0.026	-0.006	0.070	0.726
Component	(1)	(2)	(3)	(4)
Female subsample				
(Young Person) How many of young person's teachers who set homework make sure young person does it	-0.200	0.609	-0.032	-0.234
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling	0.775	-0.150	-0.032	-0.048
(Main Parent) How often speak to young person's teachers about schooling	0.775	0.037	0.095	-0.036
(Main Parent) Satisfaction with: how much interest the teachers show in young person	-0.047	0.753	0.009	0.093
(Main Parent) How involved does main parent personally feel in young person's school life	0.418	0.574	0.052	0.225
(Main Parent) Frequency of main parent talking to young person about report	-0.067	0.033	0.048	0.420
(Main Parent) Activities they or partner get involved in: Help out in class	0.103	0.005	0.712	-0.158
(Main Parent) Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	-0.044	-0.016	0.750	0.083
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations	0.037	0.037	0.453	0.385
(Main Parent) Activities they or partner get involved in: School, parent governor	0.051	-0.049	-0.084	0.787
Component	(1)	(3)	(2)	(4)

8.15 Un-weighted and weighted descriptive statistics for our estimation sample, male and female subsamples, derived from the Longitudinal Study of Young People in England 2004

LSYPE		**Sample**		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Sample sizes (*n.*)		2,406	2,411	1,250	1,069	1,156	1,342
Respective rates of participation in HE (%)		49.95	50.05	53.90	46.10	46.28	53.72
Gender	Male (%)	48.05*	51.95*	-	-	-	-
	Female (%)	51.95*	48.05*	-	-	-	-
Quarter of birth	Sept'89 to Nov'89 (%)	25.56	23.35	25.12	23.76	26.04	23.03
	Dec'89 to Feb'90 (%)	22.40	24.26	21.36	24.13	23.53	24.37
	Mar'90 to May'90 (%)	25.81	26.79	26.00	26.01	25.61	27.42
	Jun'90 to Aug'90 (%)	26.23	25.59	27.52	26.10	24.83	25.19
Single parent household	No (%)	77.40*	85.89*	80.08*	87.51*	74.50*	84.59*
	Yes (%)	22.60*	14.11*	19.92*	12.49*	25.50*	15.41*
Household Income	Mean (£ pa)	26,410*	34,264*	27,195*	35,585*	25,562*	33,212*
	10th percentile (£ pa)	6,760	6,760	6,760	7,800	6,760	6,760
	25th percentile (£ pa)	13,000	15,080	13,000	15,080	11,960	15,080
	50th percentile (£ pa)	22,100	27,300	24,700	29,900	20,280	27,300
	75th percentile (£ pa)	35,100	41,940	35,100	Restricted	32,500	40,500
	90th percentile (£ pa)	46,952	67,500	Restricted	72,500	46,050	67,500
Family's National Statistics Socioeconomic Classification Class	Managerial & professional (%)	32.25*	53.63*	31.12*	54.54*	33.48*	52.91*
	Intermediate (%)	7.77	7.63	8.00	7.86	7.53	7.45
	Small employers & own account workers (%)	13.34	11.53	13.76	12.54	12.89	10.73
	Lower supervisory & technical occupations (%)	13.47*	8.34*	14.00*	7.39*	12.89*	9.09*
	Semi-routine (%)	13.38*	7.88*	13.68*	7.67*	13.06*	8.05*
	Routine (%)	13.88*	6.14*	13.36*	5.99*	14.45*	6.26*
	Unemployed (%)	2.99	2.53	3.04	1.78	2.94	3.13
	Specific missing cases (%)	2.91	2.32	3.04	2.25	2.77	2.38
Family's highest educational qualification	HE Degree or above (%)	10.97*	32.77*	11.12*	36.30*	10.81*	29.96*
	Lesser HE (%)	16.38*	20.41*	15.92*	19.64*	16.87*	21.01*
	A-Level (%)	21.11*	16.96*	21.68*	16.18*	20.50	17.59
	GCSE (5 A*-C) (%)	31.88*	18.25*	31.44*	16.65*	32.35*	19.52*
	Other (%)	7.19*	2.86*	7.20*	2.90*	7.18*	2.83*
	Level 1 (%)	1.70*	0.91*	1.60*	1.03*	1.82*	0.82*
	None (%)	10.76*	7.84*	11.04*	7.30*	10.47	8.27

8.15 (Continued)

		Sample		**Male subsample**		**Female subsample**	
LSYPE		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Government office region	North (%)	18.16	18.17	18.88	19.83	17.39	16.84
	Yorkshire and the Humber (%)	10.02	9.08	10.40	8.33	9.60	9.69
	Midlands (%)	21.03	21.11	22.08	20.49	19.90	21.61
	East of England (%)	12.43	10.95	12.56	10.48	12.28	11.33
	London (%)	10.39*	19.25*	9.52*	17.77*	11.33*	20.42*
	South East (%)	17.08*	13.89*	15.92	15.62	18.34*	12.52*
	South West (%)	10.89*	7.55*	10.64*	7.48*	11.16*	7.60*
Ethnic grouping	White-British (%)	81.88*	65.66*	80.72*	67.07*	83.13*	64.53*
	Indian subcontinent (%)	6.73*	19.41*	8.08*	19.64*	5.28*	19.23*
	Black-Caribbean (%)	2.87	2.61	2.40	2.15	3.37	2.98
	Black-African (%)	0.96*	3.07*	1.04*	3.37*	0.87*	2.83*
	Mixed (%)	5.15	4.85	5.28	4.40	5.02	5.22
	Other (%)	2.41*	4.40*	2.48	3.37	2.34*	5.22*
Disability	No (%)	85.37*	89.96*	83.84*	88.31*	87.02*	91.28*
	Schooling not affected (%)	5.78*	2.78*	5.76	3.27	5.80	2.38
	Schooling affected (%)	8.85*	7.26*	10.40*	8.42*	7.18*	6.33*

**Indicates significance at the 5ppts level when conducting a mean-comparison t-test.*

Table notes: Mean comparison t-tests were conducted on a participant's gender, household income, family's highest socioeconomic class, family's highest educational qualification, single parent household and ethnic grouping excluding specific missing cases. Those statistics containing less than 10 unweighted individual-level observations were either replaced with Restricted' *or categories were merged where this was not suitable. Categories merged included 'specific missing cases' for family's highest socioeconomic class (household representative not present, not mother/father and not applicable) and single parent household categories 'yes' and 'no' are inflated slightly to reflect the omission of a specific missing category.*

8.15 (Continued)

LSYPE		**Sample**		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Population size (*p.*)		2,818	1,879	1,457	823	1,361	1,056
Respective rates of participation in HE (%)		60.0	40.0	63.9	36.1	56.31	43.69
Gender	Male (%)	51.70*	43.81*	-	-	-	-
	Female (%)	48.30*	56.19*	-	-	-	-
Quarter of birth	Sept'89 to Nov'89 (%)	24.94	23.32	24.44	23.99	25.47	22.80
	Dec'89 to Feb'90 (%)	22.49	24.32	21.71	24.24	23.33	24.38
	Mar'90 to May'90 (%)	26.41	26.44	26.44	25.94	26.38	26.83
	Jun'90 to Aug'90 (%)	26.16	25.92	27.41	25.83	24.82	25.99
Single parent household	No (%)	74.95*	85.26*	77.99*	86.75*	71.70*	84.10*
	Yes (%)	25.05*	14.74*	22.01*	13.25*	28.30*	15.90*
Household income	Mean (£ pa)	25,977*	35,930*	26,921*	36,668*	24,967*	35,354*
	10th Percentile (£ pa)	6,760	6,760	6,760	7,800	6,760	6,760
	25th Percentile (£ pa)	13,000	15,080	13,000	15,080	11,960	15,080
	50th Percentile (£ pa)	22,100	27,300	24,700	29,900	20,280	27,300
	75th Percentile (£ pa)	35,100	41,948	35,100	Restricted	32,500	40,500
	90th Percentile (£ pa)	46,908	67,500	Restricted	72,500	46,087	67,500
Family's National Statistics Socioeconomic Classification Class	Managerial & Professional (%)	30.23*	56.81*	29.28*	57.08*	31.43*	56.60*
	Intermediate (%)	7.66	7.93	7.93	8.10	7.37	7.80
	Small employers & own account workers (%)	13.22*	11.02*	13.61	11.95	12.81	10.29
	Lower supervisory & technical occupations (%)	14.52*	8.19*	15.31*	7.19*	13.68*	8.98*
	Semi-routine (%)	13.58*	7.44*	14.04*	7.92*	13.10*	7.08*
	Routine (%)	15.22*	5.26*	14.54*	5.18*	15.95*	5.33*
	Unemployed (%)	2.58*	1.63*	2.31*	1.15*	2.86	2.00
	Specific missing cases (%)	2.89*	1.71*	2.99*	1.44*	2.79	1.93
Family's highest educational qualification	HE Degree or above (%)	9.25*	34.40*	9.25*	37.85*	9.26*	31.71*
	Lesser HE (%)	15.69*	21.39*	15.70*	20.40*	15.67*	22.16*
	A-Level (%)	21.54*	17.31*	22.23*	16.34*	20.79	18.07
	GCSE (5 A*-C) (%)	33.02*	18.89*	32.75*	17.31*	33.31*	20.11*
	Other (%)	1.86*	0.63*	1.74*	0.68*	1.99*	0.59*
	Level 1 (%)	7.77*	2.33*	7.66*	2.38*	7.88*	2.30*
	None (%)	10.87*	5.05*	10.66*	5.03*	11.11*	5.07*

8.15 (Continued)

		Sample		Male subsample		Female subsample	
LSYPE		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Government office region	North (%)	18.39	19.26	19.22	21.02	17.49	17.89
	Yorkshire and the Humber (%)	9.34	8.94	9.57	7.86	9.09	9.78
	Midlands (%)	21.54	21.38	22.17	20.59	20.86	22.00
	East of England (%)	12.81	11.74	13.02	11.42	12.59	11.99
	London (%)	8.86*	15.52*	8.12*	14.69*	9.64*	16.17*
	South East (%)	16.99*	13.58*	16.19	15.16	17.85*	12.35*
	South West (%)	12.08*	9.57*	11.71	9.26	12.47	9.82
Ethnic grouping	White-British (%)	91.16*	81.67*	90.67*	82.16*	91.68*	81.29*
	Indian subcontinent (%)	1.96*	7.11*	2.27*	7.31*	1.62*	6.96*
	Black-Caribbean (%)	1.52	1.37	1.17	0.98	1.90	1.68
	Black-African (%)	0.66*	2.57*	0.65*	2.77*	0.67*	2.41*
	Mixed (%)	2.70	2.75	3.09	2.77	2.29	2.73
	Other (%)	2.00*	4.52*	2.14*	4.00*	1.85*	4.93*
Disability	No (%)	84.34*	89.17*	82.59*	87.77*	86.22*	90.26*
	Schooling not affected (%)	6.41	2.75	6.42	3.03	6.39	2.54
	Schooling affected (%)	9.25*	8.08*	10.99*	9.19*	7.39*	7.20*

** Indicates significance at the 5ppts level when conducting a mean-comparison Adjusted Wald Test.*

Table notes: Mean comparison significance adjusted Wald tests were conducted on a participant's gender, household income, family's highest socioeconomic class, family's highest educational qualification, single parent household and ethnic grouping excluding specific missing cases. Those statistics containing less than 10 unweighted individual-level observations were either replaced with 'Restricted' *or categories were merged or omitted where this was not suitable. Categories merged included 'specific missing cases' for family's highest socioeconomic class (household representative not present, not mother/father and not applicable). The specific missing category associated with single parent household categories was a omitted as a result the categories 'yes' and 'no' are inflated to reflect this.*

8.16 Assessing the impact of applying the survey weight with respect to making our estimation sample more representative of the general population.

In this section we compare the distribution of key demographic variables of our sample before and after weighting in order to determine whether weighting the data makes our sample more representative of the target population. Generally we would expect attrition to decrease the proportion of those families with less stable employment or residential patterns. As typically participants from deprived backgrounds are more likely to dropout from the study.

Our estimation sample comprises of 4,817 observations. This amounts to 31% of sweep 1 participants. Using our un-weighted sample we find that 50.1% of young people participate. Applying sample weights reduces the probability of HE participation to 40.0%. Note that HE participation for our weighted sample now mirrors official figures, which place HE participation at age 19 also at 40.0% (DfE, 2011, p.14). After applying the weights we also observe a fall in annual household income between our un-weighted and weighted samples of £381 to £29,959. Likewise, we observe a fall of 2.0ppts to 40.9% in the percentage of those families classified as managerial & professional with respect to highest socioeconomic class. Correspondingly, we also observe an increase of 1.2ppts to 12.2% for households characterised by routine operations. A similar pattern is also observed with respect to family's highest educational qualification. For instance, the percentage of family's highest educational qualification attainment characterised as an HE degree or higher decreases by 2.6ppts to 19.3%. Additionally, those characterised by 5 A*-C grade GCSEs increases by 2.1ppts to 27.3%. Furthermore, the incidence of single parent households increases by 2.6ppts to 20.8%. Perhaps most strikingly, we observe some significant shifts in ethnic composition after applying the weights. We observe an increase of approximately 13.60ppts to 87.4% with respect to white-British.

Nevertheless, as our sample uses only 58.5% of sweep 7 observations with a valid probability weight. We must, however, assess the implied distortion on key descriptive statistics resulting from omitting some observations due to incomplete responses to key variables. Our weighted HE participation variable (*p.* 8,230), using all valid observations, reveals 38.0% of young people participating in HE. This is closer to the HEIPR20 figure of 37.2% for 2009/10 (BIS, 2017b) than our sample's measure of 40.00%. Furthermore, household income on average amounts to £30,752 (*p.* 8,232). This is actually £793 higher than for our sample. Additionally, those families who have their highest NS-SEC classified as managerial & professional and routine amount to 39.5% and 11.8% respectively (*p.* 8,234). This compares reasonably well with values derived from our sample of 40.9% and 11.2%. Families who possess a HE Degree as their highest level of educational attainment and those without qualifications amount to 19.4% and 12.2% respectively. Our sample was reasonably close in the first instance at 19.3% but some way off at 8.5% in the second. Moreover, the percentage of single parent families makes up approximately 22.0% compared with our sample's value of 20.8%. Lastly, those of white-British ethnic background make up 84.1%, which is slightly lower than our sample's figure of 87.4%. We can conclude that although there is clearly some distortion resulting from the omission of valid observations with a probability weight, this does not appear particularly problematic.

Having established the direction and size of changes resulting from applying weights to our sample, it is important to cross check that these characteristics are within an acceptable boundary of our target population to establish representativeness. As we already discussed our sample provides an HE participation rate that is reasonably close to what we would expect, despite measurement differences. However, we were unable

8.16 (Continued)

to ascertain reliable figures to compare the distribution of family's highest socioeconomic status. Interestingly, the proportion of families classified as managerial & professional at 40.9% appears somewhat high. Weighting the data helps somewhat, with the un-weighted companion statistic equal to 43.0%. In addition, the composition of lone parent families for our sample is 4.0ppts lower than the corresponding ONS statistic 24.8%[231] in 2003/04 (ONS, 2015). However, HESA statistics for the 2009/10 academic year (young persons aged between 18 and 20) record that non-white students made up approximately 20.07% of first-time degree entrants with a known ethnicity (HESA, 2015). Our weighted figure is, however, 1.7ppts lower. Despite this, we can reasonably conclude that by weighting the data, our sample has become more representative of the general population.

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[231] This figure was derived from Office for National Statistics statistical tables and is an average of the years 2003 and 2004 for single parent families with dependent children.

8.17 Complete logistic regression and accompanying goodness-of-fit test output estimating the influences on Higher Education participation for our estimation sample, male and female subsamples derived from sweep 7 of the Longitudinal Study of Young People in England 2004

	Empirical Estimations				
	(1) $YP_i, BG_i,$ KS_i	**(2)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (PCA)	**(3)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (Variables)	**(4)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i$ $SCSCH_i$ (PCA)	**(5)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i$ $SCSCH_i$ (Variables)
Estimation sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
CONTROL VARIABLES					
Gender - Dummy variable (Base case: Female)					
Male	-0.373***	-0.293***	-0.338***	-0.189**	-0.205**
	(0.082)	*(0.083)*	*(0.091)*	*(0.087)*	*(0.099)*
Month/year of Birth - Dummy variables (Base case: Sept'89 to Nov'89)					
Dec'89 to Aug'90	0.385***	0.348***	0.348***	0.339***	0.374***
	(0.091)	*(0.092)*	*(0.093)*	*(0.095)*	*(0.095)*
Single parent household - Dummy variables (Base case: No)					
Yes - Single parent household	-0.197*	-0.155	-0.153	-0.053	-0.090
	(0.112)	*(0.114)*	*(0.114)*	*(0.116)*	*(0.119)*
Missing	0.240	0.415	0.471	0.019	0.133
	(0.811)	*(0.812)*	*(0.755)*	*(0.832)*	*(0.820)*
Household Income - Work, benefits and anything else for main parent and second parent					
£s per annum	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)					
Managerial & professional	0.628***	0.570***	0.564***	0.475***	0.455***
	(0.160)	*(0.162)*	*(0.165)*	*(0.167)*	*(0.173)*
Intermediate	0.616***	0.574***	0.554***	0.465**	0.441**
	(0.192)	*(0.195)*	*(0.198)*	*(0.203)*	*(0.208)*
Small employers & own account workers	0.411**	0.384**	0.336*	0.298	0.228
	(0.175)	*(0.177)*	*(0.181)*	*(0.184)*	*(0.191)*
Lower supervisory & technical occupations	0.200	0.171	0.182	0.098	0.055
	(0.179)	*(0.182)*	*(0.187)*	*(0.188)*	*(0.195)*
Semi-routine	0.375**	0.340*	0.342*	0.233	0.242
	(0.181)	*(0.184)*	*(0.187)*	*(0.191)*	*(0.196)*
Unemployed	0.313	0.313	0.305	0.184	0.189
	(0.290)	*(0.288)*	*(0.294)*	*(0.303)*	*(0.317)*
Household representative not present	-0.239	-0.241	-0.312	-0.412	-0.464
	(0.503)	*(0.511)*	*(0.512)*	*(0.644)*	*(0.685)*
Household representative not mother/father	-0.479	-0.611	-0.649	-0.487	-0.449
	(0.492)	*(0.470)*	*(0.467)*	*(0.489)*	*(0.477)*
Not applicable	0.346	0.220	0.201	0.259	0.078
	(0.442)	*(0.433)*	*(0.433)*	*(0.396)*	*(0.439)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)					
HE undergraduate degree or higher	0.990***	0.935***	0.911***	0.861***	0.818***
	(0.130)	*(0.131)*	*(0.131)*	*(0.135)*	*(0.139)*
Lesser HE	0.404***	0.397***	0.363***	0.386***	0.329***
	(0.119)	*(0.120)*	*(0.120)*	*(0.125)*	*(0.127)*
A-Level	0.083	0.085	0.072	0.098	0.074
	(0.113)	*(0.115)*	*(0.117)*	*(0.119)*	*(0.123)*
Other	-0.470	-0.479	-0.474	-0.448	-0.483
	(0.345)	*(0.316)*	*(0.302)*	*(0.298)*	*(0.306)*
Level 1	-0.322	-0.251	-0.244	-0.295	-0.333
	(0.198)	*(0.199)*	*(0.201)*	*(0.207)*	*(0.210)*
None	0.002	-0.011	0.000	-0.030	-0.070
	(0.168)	*(0.170)*	*(0.172)*	*(0.182)*	*(0.184)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Estimation sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
Government Office Region - Dummy variables (Base case: South East)					
North	0.780***	0.828***	0.830***	0.720***	0.781***
	(0.134)	*(0.137)*	*(0.140)*	*(0.141)*	*(0.147)*
York and the Humber	0.508***	0.527***	0.528***	0.438***	0.450***
	(0.151)	*(0.155)*	*(0.157)*	*(0.164)*	*(0.169)*
Midlands	0.519***	0.502***	0.505***	0.468***	0.503***
	(0.125)	*(0.128)*	*(0.128)*	*(0.133)*	*(0.137)*
East of England	0.452***	0.459***	0.464***	0.424***	0.490***
	(0.141)	*(0.143)*	*(0.143)*	*(0.148)*	*(0.154)*
London	0.658***	0.587***	0.580***	0.516***	0.552***
	(0.160)	*(0.160)*	*(0.160)*	*(0.159)*	*(0.162)*
South West	0.319**	0.309*	0.295*	0.252	0.308*
	(0.158)	*(0.159)*	*(0.161)*	*(0.166)*	*(0.174)*
Index of Multiple Deprivation 4 Quantiles (Base case: High)					
High-Medium	0.244**	0.207*	0.177	0.227*	0.193
	(0.118)	*(0.120)*	*(0.121)*	*(0.122)*	*(0.125)*
Low-Medium	0.376***	0.355***	0.333***	0.407***	0.369***
	(0.126)	*(0.127)*	*(0.129)*	*(0.131)*	*(0.135)*
Low	0.583***	0.562***	0.534***	0.619***	0.593***
	(0.128)	*(0.130)*	*(0.131)*	*(0.134)*	*(0.138)*
Key Skills					
Technical Skill (1st order)	0.911***	0.866***	0.880***	0.641***	0.681***
	(0.055)	*(0.055)*	*(0.056)*	*(0.061)*	*(0.064)*
Technical Skill (2nd order)	0.115***	0.100**	0.098**	0.052	0.063
	(0.041)	*(0.041)*	*(0.042)*	*(0.043)*	*(0.044)*
Gifted & Talented	0.123**	0.099**	0.097**	0.078	0.068
	(0.048)	*(0.049)*	*(0.049)*	*(0.051)*	*(0.050)*
Literacy Skill	0.356***	0.348***	0.333***	0.241***	0.198***
	(0.047)	*(0.048)*	*(0.048)*	*(0.050)*	*(0.053)*
Disability - Dummy variables (Base case: No)					
Yes - Schooling affected	-0.362*	-0.430**	-0.390*	-0.163	-0.131
	(0.206)	*(0.203)*	*(0.208)*	*(0.206)*	*(0.227)*
Yes - Schooling not affected	-0.117	-0.106	-0.125	-0.087	-0.107
	(0.140)	*(0.143)*	*(0.143)*	*(0.151)*	*(0.151)*
Ethnic Group - Dummy variables (Base case: White-British)					
Indian subcontinent	2.320***	2.159***	2.147***	1.825***	1.866***
	(0.171)	*(0.173)*	*(0.177)*	*(0.175)*	*(0.183)*
Black-Caribbean	0.682**	0.581**	0.605**	0.416	0.472*
	(0.270)	*(0.283)*	*(0.274)*	*(0.284)*	*(0.278)*
Black-African	2.145***	2.074***	2.039***	1.794***	1.792***
	(0.410)	*(0.425)*	*(0.427)*	*(0.420)*	*(0.405)*
Mixed	0.263	0.275	0.283	0.207	0.239
	(0.224)	*(0.221)*	*(0.223)*	*(0.210)*	*(0.212)*
Other	1.311***	1.238***	1.237***	1.031***	1.018***
	(0.262)	*(0.265)*	*(0.265)*	*(0.274)*	*(0.280)*
First language - Dummy variables (Base case: English)					
Bilingual	0.715*	0.652*	0.574	0.485	0.550*
	(0.379)	*(0.361)*	*(0.363)*	*(0.340)*	*(0.323)*
Other	0.597*	0.503	0.482	0.350	0.439
	(0.317)	*(0.307)*	*(0.313)*	*(0.323)*	*(0.341)*
Extra-tuition in subjects studied at school - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.356***	0.271**	0.274**	0.285**	0.268**
	(0.110)	*(0.111)*	*(0.113)*	*(0.117)*	*(0.119)*
Extra-tuition in supplementary subjects - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.276***	0.221**	0.196**	0.190*	0.162
	(0.094)	*(0.097)*	*(0.100)*	*(0.099)*	*(0.104)*
Older siblings					
(*n.*)	-0.126***	-0.100**	-0.106**	-0.078*	-0.071
	(0.043)	*(0.043)*	*(0.043)*	*(0.045)*	*(0.046)*
Younger siblings					
(*n.*)	-0.083**	-0.073*	-0.064	-0.078*	-0.075*
	(0.042)	*(0.042)*	*(0.043)*	*(0.044)*	*(0.045)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)
Estimation sample	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS					
Cultural Capital					
Cultural Capital	-	0.221***	-	0.133***	-
	-	*(0.042)*	-	*(0.045)*	-
Habitus					
Academic Self-Perception	-	-	-	0.179***	-
	-	-	-	*(0.048)*	-
Aspirations for Further Study	-	-	-	0.535***	-
	-	-	-	*(0.064)*	-
Social Capital – young person networks					
Outgoing	-	-0.283***	-	-0.168***	-
	-	*(0.040)*	-	*(0.042)*	-
Social Participation	-	-0.028	-	-0.023	-
	-	*(0.038)*	-	*(0.040)*	-
Social Capital at home					
Parent-Young Person Connectivity	-	-	-	-0.032	-
	-	-	-	*(0.042)*	-
Parental Aspirations for Young Person	-	-	-	0.307***	-
	-	-	-	*(0.049)*	-
Parent-Young Person Concurrence	-	-	-	0.064*	-
	-	-	-	*(0.039)*	-
Social Capital at school					
Parent-School Connectivity	-	-	-	-0.188***	-
	-	-	-	*(0.042)*	-
Parental Assessment of Schooling	-	-	-	0.186***	-
	-	-	-	*(0.042)*	-
Parental Participation in School	-	-	-	0.016	-
Activities	-	-	-	*(0.046)*	-
Parental Involvement in School	-	-	-	-0.004	-
Governance	-	-	-	*(0.042)*	-
CULTURAL CAPITAL VARIABLES					
(Young Person) Frequency of reading for pleasure (Base case: Never)					
Hardly ever	-	-	-0.105	-	0.051
	-	-	*(0.261)*	-	*(0.284)*
Less than once a week	-	-	0.626**	-	0.688**
	-	-	*(0.250)*	-	*(0.273)*
Once a week on average	-	-	0.246	-	0.208
	-	-	*(0.234)*	-	*(0.255)*
More than once a week	-	-	0.378*	-	0.307
	-	-	*(0.227)*	-	*(0.247)*
Most days	-	-	0.520**	-	0.370
	-	-	*(0.224)*	-	*(0.245)*
(Young Person) Whether been to or done in last 4 weeks: Gone to a cinema, theatre or concert (Base case: Not mentioned)					
Mentioned	-	-	0.231***	-	0.200**
	-	-	*(0.080)*	-	*(0.085)*
(Young Person) Whether been to or done in last 4 weeks: Played a musical instrument (Base case: Not mentioned)					
Mentioned	-	-	0.180*	-	0.119
	-	-	*(0.095)*	-	*(0.099)*
HABITUS VARIABLES					
(Young Person) Intentions after Year 11 (Base case: Leave FT education)					
Leave but return to FT education later	-	-	-	-	0.830**
	-	-	-	-	*(0.411)*
Stay in FT education	-	-	-	-	0.761***
	-	-	-	-	*(0.242)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)
Estimation sample	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*
(Young Person) Likelihood of young person getting into university if apply (Base case: Not at all likely)					
Not very likely	-	-	-	-	0.103
	-	-	-	-	*(0.265)*
Fairly likely	-	-	-	-	0.857***
	-	-	-	-	*(0.227)*
Very likely	-	-	-	-	1.190***
	-	-	-	-	*(0.244)*
(Young Person) How good young person thinks young person is at school work (Base case: Below average)					
Average	-	-	-	-	-0.345
	-	-	-	-	*(0.421)*
Above average	-	-	-	-	-0.108
	-	-	-	-	*(0.429)*
Very good	-	-	-	-	-0.071
	-	-	-	-	*(0.443)*
(Young Person) How good teachers think young person is at school work (Base case: Below average)					
Average	-	-	-	-	0.265
	-	-	-	-	*(0.404)*
Above average	-	-	-	-	0.445
	-	-	-	-	*(0.413)*
Very good	-	-	-	-	0.633
	-	-	-	-	*(0.426)*
(Young Person) How good or bad at this subject: Mathematics (Base case: Not very good)					
Fairly good	-	-	-	-	-0.234
	-	-	-	-	*(0.148)*
Very good	-	-	-	-	-0.375**
	-	-	-	-	*(0.176)*
(Young Person) How good or bad at this subject: English (Base case: Not very good)					
Fairly good	-	-	-	-	0.390***
	-	-	-	-	*(0.140)*
Very good	-	-	-	-	0.373**
	-	-	-	-	*(0.166)*
(Young Person) How good or bad at this subject: Science (Base case: Not very good)					
Fairly good	-	-	-	-	-0.059
	-	-	-	-	*(0.125)*
Very good	-	-	-	-	-0.055
	-	-	-	-	*(0.148)*
(Young Person) How good or bad at this subject: ICT (Base case: Not very good)					
Fairly good	-	-	-	-	0.187
	-	-	-	-	*(0.115)*
Very good	-	-	-	-	0.050
	-	-	-	-	*(0.128)*
SOCIAL CAPITAL – YOUNG PERSON NETWORKS VARIABLES					
(Young Person) Frequency of doing sports (Base case: Never)					
Hardly ever	-	-	0.126	-	0.089
	-	-	*(0.221)*	-	*(0.245)*
Less than once a week	-	-	0.333	-	0.278
	-	-	*(0.225)*	-	*(0.247)*
Once a week on average	-	-	0.455**	-	0.357*
	-	-	*(0.192)*	-	*(0.214)*
More than once a week	-	-	0.520***	-	0.382*
	-	-	*(0.182)*	-	*(0.205)*
Most days	-	-	0.551***	-	0.365*
	-	-	*(0.186)*	-	*(0.211)*
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco (Base case: Not mentioned)					
Mentioned	-	-	-0.086	-	-0.019
	-	-	*(0.092)*	-	*(0.098)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Estimation sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a political meeting, march, rally or demonstration (Base case: Not mentioned)					
Mentioned	-	-	0.003	-	0.071
	-	-	*(0.330)*	-	*(0.370)*
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a youth club or something like it (including scouts or girl guides) (Base case: Not mentioned)					
Mentioned	-	-	-0.138	-	-0.120
	-	-	*(0.095)*	-	*(0.099)*
(Young Person) How many times young person had friends round to house in last 7 days (Base case: None)					
Once or twice	-	-	0.055	-	0.048
	-	-	*(0.096)*	-	*(0.101)*
Three to five	-	-	0.159	-	0.110
	-	-	*(0.125)*	-	*(0.134)*
Six to seven	-	-	-0.288	-	-0.240
	-	-	*(0.205)*	-	*(0.225)*
(Young Person) How many times gone out with friends in last 7 days (Base case: None)					
Once or twice	-	-	-0.078	-	-0.079
	-	-	*(0.114)*	-	*(0.122)*
Three to five	-	-	-0.362***	-	-0.262*
	-	-	*(0.131)*	-	*(0.141)*
Six to seven	-	-	-0.735***	-	-0.494***
	-	-	*(0.157)*	-	*(0.173)*
(Young Person) Whether been to or done in last 4 weeks (2): Just hung around, messed about near to your home (Base case: Not mentioned)					
Mentioned	-	-	-0.296***	-	-0.239***
	-	-	*(0.084)*	-	*(0.089)*
SOCIAL CAPITAL AT HOME VARIABLES					
(Main Parent) What would like young person to do when reach school leaving age (Base case: Get a FT job)					
Learn a trade/skill	-	-	-	-	-0.218
	-	-	-	-	*(0.547)*
Continue in FT education	-	-	-	-	0.620
	-	-	-	-	*(0.531)*
(Young Person) How often talk about plans for future study with - Members of family (Base case: Never)					
Not very often	-	-	-	-	0.287
	-	-	-	-	*(0.303)*
A little	-	-	-	-	0.408
	-	-	-	-	*(0.283)*
Quite a lot	-	-	-	-	0.542*
	-	-	-	-	*(0.283)*
A lot	-	-	-	-	0.622**
	-	-	-	-	*(0.306)*
(Young Person) Whether anyone at home makes sure that do homework (Base case: Never)					
Occasionally	-	-	-	-	0.061
	-	-	-	-	*(0.1890*
Sometimes	-	-	-	-	-0.099
	-	-	-	-	*(0.160)*
Every time	-	-	-	-	-0.363**
	-	-	-	-	*(0.160)*
(Young Person) How often parents know where going when out in evening (Base case: Never)					
Rarely	-	-	-	-	0.998
	-	-	-	-	*(0.935)*
Sometimes	-	-	-	-	0.714
	-	-	-	-	*(0.894)*
Usually	-	-	-	-	0.906
	-	-	-	-	*(0.881)*
Always	-	-	-	-	0.984
	-	-	-	-	*(0.880)*
Home	-	-	-	-	1.144
	-	-	-	-	*(0.898)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)	Coef. (β)
Estimation sample	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*	*(s.e.)*
(Young Person) How often parents talk to young person about day at school (Base case: Never)					
Sometimes	-	-	-	-	0.240
	-	-	-	-	*(0.237)*
Often	-	-	-	-	0.248
	-	-	-	-	*(0.242)*
(Main Parent) How well get on with young person (Base case: Badly)					
Well	-	-	-	-	-0.802*
	-	-	-	-	*(0.423)*
(Young Person) How well get on with (step-) mother[father] (Base case: Badly)					
Well	-	-	-	-	0.195
	-	-	-	-	*(0.491)*
(Young Person) How often talk to (step-) mother[father] about things that matter to Young person (Base case: Never)					
Hardly ever	-	-	-	-	-0.355
	-	-	-	-	*(0.319)*
Less than once a week	-	-	-	-	-0.329
	-	-	-	-	*(0.318)*
Once a week on average	-	-	-	-	-0.446
	-	-	-	-	*(0.315)*
Most days	-	-	-	-	-0.478
	-	-	-	-	*(0.316)*
(Young Person) How many times eaten evening meal with family in last 7 days (Base case: None)					
One to two days a week	-	-	-	-	0.454**
	-	-	-	-	*(0.185)*
Three to five days a week	-	-	-	-	0.677***
	-	-	-	-	*(0.179)*
Six to seven days a week	-	-	-	-	0.688***
	-	-	-	-	*(0.174)*
SOCIAL CAPITAL AT SCHOOL VARIABLES					
(Young Person) How many of young person's teachers who set homework make sure young person does it (Base case: None)					
Hardly any	-	-	-	-	-1.285
	-	-	-	-	*(0.890)*
Some	-	-	-	-	-0.860
	-	-	-	-	*(0.855)*
Most	-	-	-	-	-0.568
	-	-	-	-	*(0.851)*
All	-	-	-	-	-0.518
	-	-	-	-	*(0.853)*
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling (Base case: Yes)					
No	-	-	-	-	-0.171*
	-	-	-	-	*(0.104)*
(Main Parent) How often speak to young person's teachers about schooling (Base case: Never)					
Less than once a term	-	-	-	-	-0.045
	-	-	-	-	*(0.101)*
Once a term on average	-	-	-	-	-0.048
	-	-	-	-	*(0.117)*
Every two to three weeks	-	-	-	-	-0.691*
	-	-	-	-	*(0.358)*
Once a week	-	-	-	-	-0.860**
	-	-	-	-	*(0.344)*
(Main Parent) Satisfaction with: how much interest the teachers show in young person (Base case: Very dissatisfied)					
Fairly dissatisfied	-	-	-	-	0.615
	-	-	-	-	*(0.449)*
Fairly satisfied	-	-	-	-	0.911**
	-	-	-	-	*(0.421)*
Very satisfied	-	-	-	-	1.135***
	-	-	-	-	*(0.423)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Estimation sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
(Main Parent) How involved does main parent personally feel in young person's school life (Base case: Not at all involved)					
Not very involved	-	-	-	-	-0.263
	-	-	-	-	*(0.225)*
Fairly involved	-	-	-	-	-0.304
	-	-	-	-	*(0.220)*
Very involved	-	-	-	-	-0.320
	-	-	-	-	*(0.232)*
(Main Parent) Frequency of main parent talking to young person about report (Base case: Less than every time a report comes)					
Every time a report comes	-	-	-	-	-0.106
	-	-	-	-	*(0.271)*
(Main Parent) Activities they or partner get involved in: Help out in class (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.464
	-	-	-	-	*(0.647)*
(Main Parent) Activities they or partner get involved in: Help out elsewhere e.g. library, school trips, dinner duty (Base case: Not mentioned)					
Mentioned	-	-	-	-	-0.144
	-	-	-	-	*(0.275)*
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.149
	-	-	-	-	*(0.193)*
(Main Parent) Activities they or partner get involved in: School, parent governor (Base case: Not mentioned)					
Mentioned	-	-	-	-	-0.308
	-	-	-	-	*(0.390)*
CONSTANT					
Constant	-2.258***	-2.160***	-2.684***	-2.067***	-6.685***
	(0.235)	*(0.239)*	*(0.353)*	*(0.246)*	*(1.618)*
REGRESSION STATISTICS					
n.	4,817	4,817	4,817	4,817	4,817
Log pseudo-likelihood	-2,249.09	-2,207.98	-2,176.69	-2,061.12	-1,996.25
Pseudo R^2	0.2885	0.3015	0.3114	0.3480	0.3685
	(46)	(49)	(68)	(58)	(132)
Wald X^2	1,126.87	1,159.33	1,185.47	1,156.82	1,240.13
Prob > X^2	0.0000	0.0000	0.0000	0.0000	0.0000
Iterations	4	4	4	5	5
GOODNESS-OF-FIT TESTS					
F(9,4808)	1.91	1.48	1.55	1.23	1.17
Prob > F	0.0463	0.1508	0.1233	0.2686	0.3082
AKAIKE AND BAYESIAN INFORMATION CRITERION					
Log-likelihood (Null)	-3,161.24	-3,161.24	-3,161.24	-3,161.24	-3,161.24
Log-likelihood (Model)	-2,249.09	-2,207.98	-2,176.69	-2,061.12	-1,996.25
Degrees of Freedom	47	50	69	59	133
AIC	4,592.17	4,515.97	4,491.37	4,240.23	4,258.51
BIC	4,896.73	4,839.96	4,938.48	4,622.55	5,120.34

[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.17 (Continued)

	Empirical Estimations				
	(1) $YP_i, BG_i,$ KS_i	**(2)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (PCA)	**(3)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (Variables)	**(4)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (PCA)	**(5)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (Variables)
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CONTROL VARIABLES					
Month/year of birth - Dummy variables (Base case: Sept'89 to Nov'89)					
Dec'89 to Aug'90	0.285**	0.261**	0.272**	0.279**	0.315**
	(0.129)	*(0.131)*	*(0.133)*	*(0.136)*	*(0.143)*
Single parent household - Dummy variables (Base case: No)					
Yes - Single parent household	0.006	0.013	0.054	0.111	0.035
	(0.167)	*(0.168)*	*(0.170)*	*(0.170)*	*(0.180)*
Missing	1.480	1.740*	1.982**	1.407	1.860
	(0.989)	*(1.015)*	*(0.938)*	*(1.251)*	*(1.234)*
Household income - Work, benefits and anything else for main and second parent.					
£s per annum	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)					
Managerial & professional	0.681***	0.635***	0.557**	0.523**	0.400
	(0.238)	*(0.241)*	*(0.247)*	*(0.250)*	*(0.271)*
Intermediate	0.513*	0.511*	0.509*	0.424	0.409
	(0.284)	*(0.287)*	*(0.296)*	*(0.298)*	*(0.324)*
Small employers & own account workers	0.385	0.340	0.268	0.246	0.027
	(0.256)	*(0.259)*	*(0.266)*	*(0.271)*	*(0.294)*
Lower supervisory & technical occupations	0.004	-0.002	0.004	-0.044	-0.236
	(0.272)	*(0.277)*	*(0.286)*	*(0.290)*	*(0.311)*
Semi-routine	0.375	0.361	0.343	0.250	0.203
	(0.264)	*(0.269)*	*(0.273)*	*(0.277)*	*(0.298)*
Unemployed	-0.217	-0.217	-0.253	-0.302	-0.570
	(0.456)	*(0.443)*	*(0.447)*	*(0.464)*	*(0.492)*
Household representative not present	-0.875	-0.920	-0.823	-1.050	-1.087
	(0.879)	*(0.839)*	*(0.952)*	*(0.920)*	*(1.160)*
Household representative not mother/father	-0.523	-0.751	-0.898	-0.615	-0.986
	(0.641)	*(0.624)*	*(0.597)*	*(0.719)*	*(0.772)*
Not applicable	-0.925	-1.011	-1.106*	-0.621	-0.982
	(0.652)	*(0.625)*	*(0.646)*	*(0.590)*	*(0.702)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)					
HE undergraduate degree or higher	1.219***	1.182***	1.225***	1.124***	1.094***
	(0.190)	*(0.191)*	*(0.196)*	*(0.201)*	*(0.208)*
Lesser HE	0.536***	0.525***	0.506***	0.502***	0.410**
	(0.175)	*(0.177)*	*(0.180)*	*(0.184)*	*(0.194)*
A-Level	0.200	0.209	0.213	0.238	0.277
	(0.170)	*(0.174)*	*(0.177)*	*(0.181)*	*(0.192)*
Other	-0.163	-0.155	-0.008	-0.063	-0.076
	(0.452)	*(0.431)*	*(0.404)*	*(0.407)*	*(0.454)*
Level 1	-0.103	-0.001	-0.006	-0.029	-0.020
	(0.280)	*(0.289)*	*(0.288)*	*(0.295)*	*(0.317)*
None	0.177	0.191	0.231	0.159	0.122
	(0.252)	*(0.254)*	*(0.252)*	*(0.281)*	*(0.268)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Dummy variables (Base case: South East)					
North	0.724***	0.818***	0.880***	0.698***	0.795***
	(0.193)	*(0.197)*	*(0.203)*	*(0.206)*	*(0.228)*
York and the Humber	0.097	0.128	0.102	0.059	0.079
	(0.223)	*(0.229)*	*(0.233)*	*(0.242)*	*(0.260)*
Midlands	0.265	0.259	0.254	0.200	0.205
	(0.178)	*(0.181)*	*(0.185)*	*(0.192)*	*(0.209)*
East of England	0.234	0.207	0.233	0.219	0.329
	(0.202)	*(0.205)*	*(0.209)*	*(0.215)*	*(0.226)*
London	0.581**	0.484**	0.418*	0.399*	0.378
	(0.236)	*(0.237)*	*(0.242)*	*(0.237)*	*(0.264)*
South West	0.238	0.249	0.208	0.213	0.246
	(0.234)	*(0.240)*	*(0.242)*	*(0.262)*	*(0.273)*
Index of Multiple Deprivation 4 Quantiles (Base case: High)					
High-Medium	0.286	0.277	0.296	0.265	0.306
	(0.181)	*(0.182)*	*(0.185)*	*(0.185)*	*(0.195)*
Low-Medium	0.465**	0.447**	0.465**	0.472**	0.480**
	(0.184)	*(0.186)*	*(0.190)*	*(0.191)*	*(0.206)*
Low	0.546***	0.538***	0.616***	0.561***	0.615***
	(0.191)	*(0.195)*	*(0.197)*	*(0.199)*	*(0.213)*
Key Skills					
Technical Skill (1st order)	1.010***	0.942***	0.976***	0.633***	0.649***
	(0.084)	*(0.085)*	*(0.089)*	*(0.095)*	*(0.107)*
Technical Skill (2nd order)	0.064	0.044	0.033	-0.018	-0.029
	(0.060)	*(0.061)*	*(0.062)*	*(0.063)*	*(0.066)*
Gifted & Talented	0.106	0.078	0.076	0.058	0.058
	(0.067)	*(0.071)*	*(0.069)*	*(0.074)*	*(0.075)*
Literacy Skill	0.338***	0.343***	0.338***	0.258***	0.209***
	(0.062)	*(0.064)*	*(0.065)*	*(0.068)*	*(0.075)*
Disability - Dummy variables (Base case: No)					
Yes - Schooling affected	-0.250	-0.407	-0.464	-0.101	-0.160
	(0.304)	*(0.308)*	*(0.324)*	*(0.300)*	*(0.341)*
Yes - Schooling not affected	-0.184	-0.172	-0.196	-0.149	-0.103
	(0.185)	*(0.192)*	*(0.192)*	*(0.205)*	*(0.212)*
Ethnic Group - Dummy variables (Base case: White-British)					
Indian subcontinent	2.173***	2.086***	2.098***	1.633***	1.776***
	(0.261)	*(0.266)*	*(0.271)*	*(0.265)*	*(0.283)*
Black-Caribbean	0.482	0.595	0.595	0.376	0.483
	(0.389)	*(0.384)*	*(0.405)*	*(0.400)*	*(0.437)*
Black-African	2.432***	2.430***	2.378***	2.131***	2.021***
	(0.495)	*(0.514)*	*(0.509)*	*(0.497)*	*(0.570)*
Mixed	-0.127	-0.115	-0.065	-0.082	0.005
	(0.335)	*(0.328)*	*(0.329)*	*(0.316)*	*(0.329)*
Other	1.127***	1.055***	1.065***	0.838**	0.890**
	(0.389)	*(0.389)*	*(0.388)*	*(0.410)*	*(0.438)*
First language - Dummy variables (Base case: English)					
Bilingual	0.759	0.645	0.609	0.390	0.591
	(0.516)	*(0.504)*	*(0.516)*	*(0.491)*	*(0.484)*
Other	0.696	0.619	0.625	0.648	0.808*
	(0.436)	*(0.422)*	*(0.409)*	*(0.417)*	*(0.440)*
Extra-tuition in subjects studied at school - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.500***	0.349**	0.419**	0.386**	0.516***
	(0.161)	*(0.165)*	*(0.168)*	*(0.179)*	*(0.186)*
Extra-tuition in supplementary subjects - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.217	0.134	0.167	0.160	0.222
	(0.143)	*(0.147)*	*(0.151)*	*(0.150)*	*(0.161)*
Older siblings					
Number of.	-0.053	-0.038	-0.030	0.001	-0.002
	(0.065)	*(0.066)*	*(0.066)*	*(0.069)*	*(0.067)*
Younger siblings					
Number of.	-0.072	-0.066	-0.064	-0.073	-0.079
	(0.064)	*(0.064)*	*(0.065)*	*(0.064)*	*(0.069)*

8.17 (Continued)

Male subsample	**Empirical Estimations**				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS					
Cultural Capital					
Cultural Capital	-	0.266***	-	0.168**	-
	-	*(0.061)*	-	*(0.066)*	-
Habitus					
Academic Self-Perception	-	-	-	0.300***	-
	-	-	-	*(0.076)*	-
Aspirations for Further Study	-	-	-	0.506***	-
	-	-	-	*(0.095)*	-
Social Capital – young person networks					
Outgoing	-	-0.309***	-	-0.187***	-
	-	*(0.058)*	-	*(0.062)*	-
Social Participation	-	-0.099*	-	-0.087	-
	-	*(0.057)*	-	*(0.061)*	-
Social Capital at home					
Parent-Young Person Connectivity	-	-	-	-0.069	-
	-	-	-	*(0.062)*	-
Parental Aspirations for Young Person	-	-	-	0.267***	-
	-	-	-	*(0.074)*	-
Parent-Young Person Concurrence	-	-	-	-0.021	-
	-	-	-	*(0.052)*	-
Social Capital at school					
Parent-School Connectivity	-	-	-	-0.242***	-
	-	-	-	*(0.062)*	-
Parental Assessment of Schooling	-	-	-	0.187***	-
	-	-	-	*(0.062)*	-
Parental Participation in School Activities	-	-	-	0.044	-
	-	-	-	*(0.076)*	-
Parental Involvement in School Governance	-	-	-	0.036	-
	-	-	-	*(0.058)*	-
CULTURAL CAPITAL VARIABLES					
(Young Person) Frequency of reading for pleasure (Base case: Never)					
Hardly ever	-	-	0.398	-	0.895**
	-	-	*(0.328)*	-	*(0.370)*
Less than once a week	-	-	1.012***	-	1.353***
	-	-	*(0.328)*	-	*(0.366)*
Once a week on average	-	-	0.476	-	0.656*
	-	-	*(0.307)*	-	*(0.342)*
More than once a week	-	-	0.485*	-	0.623*
	-	-	*(0.291)*	-	*(0.325)*
Most days	-	-	0.721**	-	0.789**
	-	-	*(0.289)*	-	*(0.323)*
(Young Person) Whether been to or done in last 4 weeks: Gone to a cinema, theatre or concert (Base case: Not mentioned)					
Mentioned	-	-	0.494***	-	0.425***
	-	-	*(0.119)*	-	*(0.128)*
(Young Person) Whether been to or done in last 4 weeks: Played a musical instrument (Base case: Not mentioned)					
Mentioned	-	-	0.148	-	-0.002
	-	-	*(0.135)*	-	*(0.149)*
HABITUS VARIABLES					
(Young Person) Intentions after Year 11 (Base case: Leave FT education)					
Leave but return to FT education later	-	-	-	-	0.684
	-	-	-	-	*(0.489)*
Stay in FT education	-	-	-	-	0.533*
	-	-	-	-	*(0.294)*

8.17 (Continued)

	Empirical Estimations				
	(1)	(2)	(3)	(4)	(5)
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Young Person) Likelihood of young person getting into university if apply (Base case: Not at all likely)					
Not very likely	-	-	-	-	-0.328
	-	-	-	-	*(0.376)*
Fairly likely	-	-	-	-	0.609*
	-	-	-	-	*(0.318)*
Very likely	-	-	-	-	1.000***
	-	-	-	-	*(0.355)*
(Young Person) How good young person thinks young person is at school work (Base case: Below average)					
Average	-	-	-	-	-0.370
	-	-	-	-	*(0.537)*
Above average	-	-	-	-	-0.293
	-	-	-	-	*(0.553)*
Very good	-	-	-	-	-0.225
	-	-	-	-	*(0.574)*
(Young Person) How good teachers think young person is at school work (Base case: Below average)					
Average	-	-	-	-	0.383
	-	-	-	-	*(0.594)*
Above average	-	-	-	-	0.648
	-	-	-	-	*(0.610)*
Very good	-	-	-	-	0.883
	-	-	-	-	*(0.627)*
(Young Person) How good or bad at this subject: Mathematics (Base case: Not very good)					
Fairly good	-	-	-	-	-0.099
	-	-	-	-	*(0.263)*
Very good	-	-	-	-	-0.015
	-	-	-	-	*(0.291)*
(Young Person) How good or bad at this subject: English (Base case: Not very good)					
Fairly good	-	-	-	-	0.436**
	-	-	-	-	*(0.191)*
Very good	-	-	-	-	0.560**
	-	-	-	-	*(0.231)*
(Young Person) How good or bad at this subject: Science (Base case: Not very good)					
Fairly good	-	-	-	-	-0.156
	-	-	-	-	*(0.220)*
Very good	-	-	-	-	0.080
	-	-	-	-	*(0.244)*
(Young Person) How good or bad at this subject: ICT (Base case: Not very good)					
Fairly good	-	-	-	-	0.151
	-	-	-	-	*(0.195)*
Very good	-	-	-	-	-0.093
	-	-	-	-	*(0.205)*
SOCIAL CAPITAL – YOUNG PERSON NETWORKS VARIABLES					
(Young Person) Frequency of doing sports (Base case: Never)					
Hardly ever	-	-	-0.076	-	-0.126
	-	-	*(0.491)*	-	*(0.557)*
Less than once a week	-	-	0.224	-	0.358
	-	-	*(0.490)*	-	*(0.549)*
Once a week on average	-	-	0.522	-	0.557
	-	-	*(0.430)*	-	*(0.505)*
More than once a week	-	-	0.238	-	0.229
	-	-	*(0.414)*	-	*(0.491)*
Most days	-	-	0.284	-	0.187
	-	-	*(0.408)*	-	*(0.487)*
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco (Base case: Not mentioned)					
Mentioned	-	-	-0.028	-	0.016
	-	-	*(0.149)*	-	*(0.161)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a political meeting, march, rally or demonstration (Base case: Not mentioned)					
Mentioned	-	-	0.277	-	0.427
	-	-	*(0.458)*	-	*(0.537)*
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a youth club or something like it (including scouts or girl guides) (Base case: Not mentioned)					
Mentioned	-	-	-0.432***	-	-0.433***
	-	-	*(0.141)*	-	*(0.151)*
(Young Person) How many times young person had friends round to house in last 7 days (Base case: None)					
Once or twice	-	-	-0.119	-	-0.100
	-	-	*(0.140)*	-	*(0.152)*
Three to five	-	-	0.203	-	0.178
	-	-	*(0.185)*	-	*(0.198)*
Six to seven	-	-	-0.262	-	-0.104
	-	-	*(0.295)*	-	*(0.332)*
(Young Person) How many times gone out with friends in last 7 days (Base case: None)					
Once or twice	-	-	0.039	-	-0.014
	-	-	*(0.172)*	-	*(0.187)*
Three to five	-	-	-0.465**	-	-0.436**
	-	-	*(0.192)*	-	*(0.212)*
Six to seven	-	-	-0.745***	-	-0.568**
	-	-	*(0.221)*	-	*(0.250)*
(Young Person) Whether been to or done in last 4 weeks (2): Just hung around, messed about near to your home (Base case: Not mentioned)					
Mentioned	-	-	-0.330***	-	-0.282**
	-	-	*(0.125)*	-	*(0.138)*
SOCIAL CAPITAL AT HOME VARIABLES					
(Main Parent) What would like young person to do when reach school leaving age (Base case: Get a FT job)					
Learn a trade/skill	-	-	-	-	-0.788
	-	-	-	-	*(0.682)*
Continue in FT education	-	-	-	-	0.387
	-	-	-	-	*(0.650)*
(Young Person) How often talk about plans for future study with - Members of family (Base case: Never)					
Not very often	-	-	-	-	0.720*
	-	-	-	-	*(0.435)*
A little	-	-	-	-	0.962**
	-	-	-	-	*(0.414)*
Quite a lot	-	-	-	-	1.059**
	-	-	-	-	*(0.414)*
A lot	-	-	-	-	1.184***
	-	-	-	-	*(0.450)*
(Young Person) Whether anyone at home makes sure that do homework (Base case: Never)					
Occasionally	-	-	-	-	0.168
	-	-	-	-	*(0.310)*
Sometimes	-	-	-	-	-0.236
	-	-	-	-	*(0.264)*
Every time	-	-	-	-	-0.423
	-	-	-	-	*(0.263)*
(Young Person) How often parents know where going when out in evening (Base case: Never)					
Rarely	-	-	-	-	1.043
	-	-	-	-	*(0.937)*
Sometimes	-	-	-	-	0.266
	-	-	-	-	*(0.736)*
Usually	-	-	-	-	0.565
	-	-	-	-	*(0.696)*
Always	-	-	-	-	0.657
	-	-	-	-	*(0.694)*
Home	-	-	-	-	0.398
	-	-	-	-	*(0.746)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Young Person) How often parents talk to young person about day at school (Base case: Never)					
Sometimes	-	-	-	-	0.149
	-	-	-	-	*(0.359)*
Often	-	-	-	-	0.026
	-	-	-	-	*(0.367)*
(Main Parent) How well get on with young person (Base case: Badly)					
Well	-	-	-	-	-0.855
	-	-	-	-	*(0.647)*
(Young Person) How well get on with (step-)mother[father] (Base case: Badly)					
Well	-	-	-	-	-1.455**
	-	-	-	-	*(0.683)*
(Young Person) How often talk to (step-)mother[father] about things that matter to young person (Base case: Never)					
Hardly ever	-	-	-	-	0.429
	-	-	-	-	*(0.476)*
Less than once a week	-	-	-	-	0.388
	-	-	-	-	*(0.479)*
Once a week on average	-	-	-	-	0.430
	-	-	-	-	*(0.478)*
Most days	-	-	-	-	0.130
	-	-	-	-	*(0.476)*
(Young Person) How many times eaten evening meal with family in last 7 days (Base case: None)					
One to two days a week	-	-	-	-	-0.194
	-	-	-	-	*(0.287)*
Three to five days a week	-	-	-	-	0.228
	-	-	-	-	*(0.267)*
Six to seven days a week	-	-	-	-	0.262
	-	-	-	-	*(0.257)*
SOCIAL CAPITAL AT SCHOOL VARIABLES					
(Young Person) How many of young person's teachers who set homework make sure young person does it (Base case: None)					
Hardly any	-	-	-	-	-2.079*
	-	-	-	-	*(1.199)*
Some	-	-	-	-	-1.388
	-	-	-	-	*(1.140)*
Most	-	-	-	-	-0.992
	-	-	-	-	*(1.134)*
All	-	-	-	-	-1.029
	-	-	-	-	*(1.138)*
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling (Base case: Yes)					
No	-	-	-	-	-0.281*
	-	-	-	-	*(0.156)*
(Main Parent) How often speak to young person's teachers about schooling (Base case: Never)					
Less than once a term	-	-	-	-	-0.069
	-	-	-	-	*(0.154)*
Once a term on average	-	-	-	-	-0.120
	-	-	-	-	*(0.183)*
Every two to three weeks	-	-	-	-	-0.447
	-	-	-	-	*(0.517)*
Once a week	-	-	-	-	-0.952
	-	-	-	-	*(0.595)*
(Main Parent) Satisfaction with: how much interest the teachers show in young person (Base case: Very dissatisfied)					
Fairly dissatisfied	-	-	-	-	1.085
	-	-	-	-	*(0.803)*
Fairly satisfied	-	-	-	-	1.366*
	-	-	-	-	*(0.763)*
Very satisfied	-	-	-	-	1.619**
	-	-	-	-	*(0.762)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Main Parent) How involved does main parent personally feel in young person's school life (Base case: Not at all involved)					
Not very involved	-	-	-	-	-0.238
	-	-	-	-	*(0.341)*
Fairly involved	-	-	-	-	-0.211
	-	-	-	-	*(0.333)*
Very involved	-	-	-	-	-0.327
	-	-	-	-	*(0.354)*
(Main Parent) Frequency of main parent talking to young person about report (Base case: Less than every time a report comes)					
Every time a report comes	-	-	-	-	-0.344
	-	-	-	-	*(0.400)*
(Main Parent) Activities they or partner get involved in: Help out in class (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.204
	-	-	-	-	*(1.055)*
(Main Parent) Activities they or partner get involved in: Help out elsewhere e.g. library, school trips, dinner duty (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.185
	-	-	-	-	*(0.458)*
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.247
	-	-	-	-	*(0.298)*
(Main Parent) Activities they or partner get involved in: School, parent governor (Base case: Not mentioned)					
Mentioned	-	-	-	-	-0.368
	-	-	-	-	*(0.479)*
CONSTANT					
Constant	-2.569***	-2.460***	-3.070***	-2.318***	-4.925**
	(0.345)	*(0.349)*	*(0.570)*	*(0.364)*	*(1.970)*
REGRESSION STATISTICS					
n.	2,319	2,319	2,319	2,319	2,319
Log pseudo-likelihood	-1,046.34	-1,021.07	-998.25	-946.16	-885.08
	(45)	(48)	(67)	(57)	(131)
Wald X^2	554.29	577.42	608.08	585.79	683.06
Prob > X^2	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.2983	0.3153	0.3306	0.3655	0.4065
Iterations	5	5	5	5	5
GOODNESS-OF-FIT TESTS					
F(9, 2310)	0.48	0.91	0.32	0.65	36.35
Prob > F	0.8872	0.5188	0.9700	0.7559	0.0000
AKAIKE AND BAYESIAN INFORMATION CRITERIONS					
Log-likelihood (Null)	-1,491.22	-1,491.22	1,491.22	-1,491.22	1,491.22
Log-likelihood (Model)	-1,046.34	-1,021.07	-998.25	-946.16	-885.08
Degrees of Freedom	46	49	68	58	132
AIC	2,184.69	2,140.14	2,132.49	2,008.33	2,034.16
BIC	2,449.14	2,421.84	2,523.42	2,341.77	2,793.01

[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.17 (Continued)

	Empirical Estimations				
	(1) $YP_i, BG_i,$ KS_i	**(2)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (PCA)	**(3)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i$ (Variables)	**(4)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (PCA)	**(5)** $YP_i, BG_i,$ $KS_i, CC_i,$ $SCYPNET_i,$ $HAB_i, SCHM_i,$ $SCSCH_i$ (Variables)
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
CONTROL VARIABLES					
Month/year of Birth - Dummy variables (Base case: Sept'89 to Nov'89)					
Dec'89 to Aug'90	0.466***	0.434***	0.436***	0.399***	0.416***
	(0.128)	*(0.130)*	*(0.132)*	*(0.133)*	*(0.136)*
Single parent household - Dummy variables (Base case: No)					
Yes - Single parent household	-0.349**	-0.306*	-0.280*	-0.201	-0.189
	(0.153)	*(0.157)*	*(0.157)*	*(0.160)*	*(0.169)*
Missing	-0.457	-0.339	-0.072	-0.608	-0.583
	(1.016)	*(1.011)*	*(0.875)*	*(0.922)*	*(0.862)*
Household income - Work, benefits and anything else for main and second parent					
£s per annum	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)					
Managerial & professional	0.596***	0.525**	0.572**	0.468**	0.470*
	(0.224)	*(0.224)*	*(0.234)*	*(0.233)*	*(0.244)*
Intermediate	0.811***	0.728***	0.720**	0.585**	0.542*
	(0.269)	*(0.275)*	*(0.283)*	*(0.289)*	*(0.299)*
Small employers & own account workers	0.476*	0.454*	0.428*	0.415	0.375
	(0.244)	*(0.246)*	*(0.256)*	*(0.254)*	*(0.268)*
Lower supervisory & technical occupations	0.375	0.338	0.373	0.282	0.257
	(0.246)	*(0.249)*	*(0.260)*	*(0.257)*	*(0.269)*
Semi-routine	0.350	0.305	0.348	0.219	0.164
	(0.256)	*(0.257)*	*(0.268)*	*(0.269)*	*(0.282)*
Unemployed	0.707*	0.724*	0.646	0.599	0.463
	(0.389)	*(0.389)*	*(0.396)*	*(0.400)*	*(0.438)*
Household representative not present	-0.005	0.066	0.032	0.033	-0.026
	(0.604)	*(0.585)*	*(0.608)*	*(0.847)*	*(0.836)*
Household representative not mother/father	-0.493	-0.595	-0.676	-0.520	-0.356
	(0.686)	*(0.677)*	*(0.676)*	*(0.636)*	*(0.587)*
Not applicable	1.284**	1.191*	1.028	0.968	0.817
	(0.600)	*(0.611)*	*(0.657)*	*(0.590)*	*(0.628)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)					
HE undergraduate degree or higher	0.825***	0.725***	0.698***	0.698***	0.641***
	(0.181)	*(0.182)*	*(0.182)*	*(0.184)*	*(0.194)*
Lesser HE	0.307*	0.286*	0.256	0.291*	0.219
	(0.165)	*(0.166)*	*(0.168)*	*(0.175)*	*(0.181)*
A-Level	-0.002	-0.034	-0.050	-0.044	-0.083
	(0.154)	*(0.156)*	*(0.158)*	*(0.162)*	*(0.169)*
Other	-0.672	-0.726	-0.801*	-0.735*	-0.717
	(0.534)	*(0.465)*	*(0.447)*	*(0.444)*	*(0.463)*
Level 1	-0.469*	-0.395	-0.386	-0.440	-0.542*
	(0.282)	*(0.279)*	*(0.284)*	*(0.289)*	*(0.300)*
None	-0.164	-0.193	-0.196	-0.238	-0.244
	(0.232)	*(0.237)*	*(0.245)*	*(0.244)*	*(0.265)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Dummy variables (Base case: South East)					
North	0.839***	0.835***	0.796***	0.717***	0.818***
	(0.188)	*(0.193)*	*(0.198)*	*(0.198)*	*(0.215)*
York and the Humber	0.864***	0.865***	0.853***	0.740***	0.804***
	(0.211)	*(0.217)*	*(0.222)*	*(0.230)*	*(0.243)*
Midlands	0.746***	0.708***	0.711***	0.639***	0.794***
	(0.181)	*(0.184)*	*(0.186)*	*(0.190)*	*(0.199)*
East of England	0.642***	0.644***	0.612***	0.547***	0.753***
	(0.201)	*(0.203)*	*(0.205)*	*(0.207)*	*(0.226)*
London	0.697***	0.626***	0.663***	0.587***	0.745***
	(0.219)	*(0.221)*	*(0.218)*	*(0.217)*	*(0.224)*
South West	0.409*	0.366*	0.346	0.269	0.405*
	(0.216)	*(0.217)*	*(0.216)*	*(0.221)*	*(0.232)*
Index of Multiple Deprivation 4 Quantiles (Base case: High)					
High-Medium	0.229	0.165	0.137	0.205	0.136
	(0.162)	*(0.163)*	*(0.168)*	*(0.169)*	*(0.179)*
Low-Medium	0.316*	0.276	0.271	0.356*	0.323*
	(0.178)	*(0.181)*	*(0.184)*	*(0.187)*	*(0.194)*
Low	0.662***	0.618***	0.584***	0.717***	0.711***
	(0.179)	*(0.181)*	*(0.184)*	*(0.188)*	*(0.197)*
Key Skills					
Technical Skill (1st order)	0.918***	0.884***	0.904***	0.691***	0.802***
	(0.075)	*(0.075)*	*(0.077)*	*(0.081)*	*(0.088)*
Technical Skill (2nd order)	0.141**	0.131**	0.137**	0.097	0.133**
	(0.059)	*(0.058)*	*(0.059)*	*(0.060)*	*(0.062)*
Gifted & Talented	0.155**	0.137*	0.147*	0.116	0.113
	(0.074)	*(0.075)*	*(0.076)*	*(0.075)*	*(0.076)*
Literacy Skill	0.274***	0.266***	0.234***	0.209***	0.110
	(0.063)	*(0.063)*	*(0.064)*	*(0.064)*	*(0.068)*
Disability - Dummy variables (Base case: No)					
Yes - Schooling affected	-0.453	-0.436	-0.373	-0.252	-0.152
	(0.294)	*(0.292)*	*(0.310)*	*(0.300)*	*(0.351)*
Yes - Schooling not affected	-0.083	-0.079	-0.114	-0.052	-0.116
	(0.216)	*(0.222)*	*(0.218)*	*(0.230)*	*(0.239)*
Ethnic Group - Dummy variables (Base case: White-British)					
Indian subcontinent	2.607***	2.406***	2.489***	2.134***	2.357***
	(0.246)	*(0.250)*	*(0.259)*	*(0.253)*	*(0.280)*
Black-Caribbean	0.824**	0.664*	0.680*	0.533	0.475
	(0.379)	*(0.381)*	*(0.366)*	*(0.385)*	*(0.370)*
Black-African	1.926***	1.826***	1.843***	1.480**	1.657***
	(0.607)	*(0.635)*	*(0.654)*	*(0.610)*	*(0.518)*
Mixed	0.556*	0.554*	0.621**	0.398	0.470
	(0.297)	*(0.292)*	*(0.298)*	*(0.290)*	*(0.303)*
Other	1.598***	1.530***	1.611***	1.327***	1.379***
	(0.364)	*(0.365)*	*(0.387)*	*(0.373)*	*(0.439)*
First language - Dummy variables (Base case: English)					
Bilingual	0.905	0.849	0.772	0.770	0.880
	(0.623)	*(0.601)*	*(0.550)*	*(0.524)*	*(0.555)*
Other	0.359	0.248	0.176	0.009	0.033
	(0.451)	*(0.438)*	*(0.458)*	*(0.443)*	*(0.480)*
Extra-tuition in subjects studied at school - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.235	0.164	0.153	0.195	0.129
	(0.154)	*(0.157)*	*(0.158)*	*(0.158)*	*(0.166)*
Extra-tuition in supplementary subjects - Dummy variable (Base case: No)					
Yes - Extra tuition received	0.346***	0.289**	0.232*	0.214	0.150
	(0.129)	*(0.132)*	*(0.136)*	*(0.134)*	*(0.143)*
Older siblings					
Number of.	-0.200***	-0.170***	-0.188***	-0.151***	-0.158***
	(0.056)	*(0.056)*	*(0.058)*	*(0.057)*	*(0.061)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Younger siblings					
Number of.	-0.105*	-0.093*	-0.093	-0.090	-0.094
	(0.056)	*(0.056)*	*(0.058)*	*(0.059)*	*(0.062)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS					
Cultural Capital					
Cultural Capital	-	0.198***	-	0.133**	-
	-	*(0.059)*	-	*(0.061)*	-
Habitus					
Academic Self-Perception	-	-	-	0.211***	-
	-	-	-	*(0.065)*	-
Aspirations for Further Study	-	-	-	0.380***	-
	-	-	-	*(0.088)*	-
Social Capital – young person networks					
Outgoing	-	-0.264***	-	-0.162***	-
	-	*(0.056)*	-	*(0.059)*	-
Social Participation	-	0.089*	-	0.078	-
	-	*(0.051)*	-	*(0.053)*	-
Social Capital at home					
Parent-Young Person Connectivity	-	-	-	0.014	-
	-	-	-	*(0.059)*	-
Parental Aspirations for Young Person	-	-	-	0.297***	-
	-	-	-	*(0.063)*	-
Parent-Young Person Concurrence	-	-	-	0.118**	-
	-	-	-	*(0.052)*	-
Social Capital at school					
Parent-School Connectivity	-	-	-	-0.143**	-
	-	-	-	*(0.058)*	-
Parental Assessment of Schooling	-	-	-	0.184***	-
	-	-	-	*(0.059)*	-
Parental Participation in School Activities	-	-	-	-0.029	-
	-	-	-	*(0.054)*	-
Parental Involvement in School Governance	-	-	-	-0.032	-
	-	-	-	*(0.060)*	-
CULTURAL CAPITAL VARIABLES					
(Young Person) Frequency of reading for pleasure (Base case: Never)					
Hardly ever	-	-	-0.874**	-	-1.067**
	-	-	*(0.437)*	-	*(0.464)*
Less than once a week	-	-	0.063	-	-0.154
	-	-	*(0.393)*	-	*(0.417)*
Once a week on average	-	-	-0.152	-	-0.430
	-	-	*(0.371)*	-	*(0.391)*
More than once a week	-	-	0.161	-	-0.177
	-	-	*(0.366)*	-	*(0.387)*
Most days	-	-	0.216	-	-0.177
	-	-	*(0.356)*	-	*(0.378)*
(Young Person) Whether been to or done in last 4 weeks: Gone to a cinema, theatre or concert (Base case: Not mentioned)					
Mentioned	-	-	0.023	-	0.026
	-	-	*(0.114)*	-	*(0.121)*
(Young Person) Whether been to or done in last 4 weeks: Played a musical instrument (Base case: Not mentioned)					
Mentioned	-	-	0.191	-	0.175
	-	-	*(0.135)*	-	*(0.141)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
HABITUS VARIABLES					
(Young Person) Intentions after Year 11 (Base case: Leave FT education)					
Leave but return to FT education later	-	-	-	-	1.079
	-	-	-	-	*(0.880)*
Stay in FT education	-	-	-	-	0.920**
	-	-	-	-	*(0.458)*
(Young Person) Likelihood of young person getting into university if apply (Base case: Not at all likely)					
Not very likely	-	-	-	-	0.609
	-	-	-	-	*(0.389)*
Fairly likely	-	-	-	-	1.200***
	-	-	-	-	*(0.340)*
Very likely	-	-	-	-	1.565***
	-	-	-	-	*(0.361)*
(Young Person) How good young person thinks young person is at school work (Base case: Below average)					
Average	-	-	-	-	-0.012
	-	-	-	-	*(0.646)*
Above average	-	-	-	-	0.377
	-	-	-	-	*(0.661)*
Very good	-	-	-	-	0.429
	-	-	-	-	*(0.677)*
(Young Person) How good teachers think young person is at school work (Base case: Below average)					
Average	-	-	-	-	0.391
	-	-	-	-	*(0.568)*
Above average	-	-	-	-	0.507
	-	-	-	-	*(0.583)*
Very good	-	-	-	-	0.582
	-	-	-	-	*(0.600)*
(Young Person) How good or bad at this subject: Mathematics (Base case: Not very good)					
Fairly good	-	-	-	-	-0.362*
	-	-	-	-	*(0.187)*
Very good	-	-	-	-	-0.751***
	-	-	-	-	*(0.237)*
(Young Person) How good or bad at this subject: English (Base case: Not very good)					
Fairly good	-	-	-	-	0.441**
	-	-	-	-	*(0.219)*
Very good	-	-	-	-	0.360
	-	-	-	-	*(0.251)*
(Young Person) How good or bad at this subject: Science (Base case: Not very good)					
Fairly good	-	-	-	-	0.016
	-	-	-	-	*(0.162)*
Very good	-	-	-	-	-0.277
	-	-	-	-	*(0.202)*
(Young Person) How good or bad at this subject: ICT (Base case: Not very good)					
Fairly good	-	-	-	-	0.186
	-	-	-	-	*(0.149)*
Very good	-	-	-	-	0.178
	-	-	-	-	*(0.177)*
SOCIAL CAPITAL – YOUNG PERSON NETWORKS VARIABLES					
(Young Person) Frequency of doing sports (Base case: Never)					
Hardly ever	-	-	0.220	-	0.162
	-	-	*(0.251)*	-	*(0.286)*
Less than once a week	-	-	0.383	-	0.328
	-	-	*(0.256)*	-	*(0.287)*
Once a week on average	-	-	0.450**	-	0.330
	-	-	*(0.221)*	-	*(0.249)*
More than once a week	-	-	0.693***	-	0.569**
	-	-	*(0.207)*	-	*(0.235)*
Most days	-	-	0.813***	-	0.637**
	-	-	*(0.226)*	-	*(0.260)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Young Person) Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco (Base case: Not mentioned)					
Mentioned	-	-	-0.121	-	-0.028
	-	-	*(0.121)*	-	*(0.130)*
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a political meeting, march, rally or demonstration (Base case: Not mentioned)					
Mentioned	-	-	-0.226	-	-0.225
	-	-	*(0.473)*	-	*(0.506)*
(Young Person) Whether been to or done in last 4 weeks (2): Gone to a youth club or something like it (including scouts or girl guides) (Base case: Not mentioned)					
Mentioned	-	-	0.111	-	0.153
	-	-	*(0.132)*	-	*(0.142)*
(Young Person) How many times young person had friends round to house in last 7 days (Base case: None)					
Once or twice	-	-	0.186	-	0.192
	-	-	*(0.136)*	-	*(0.147)*
Three to five	-	-	0.114	-	0.064
	-	-	*(0.178)*	-	*(0.193)*
Six to seven	-	-	-0.430	-	-0.381
	-	-	*(0.294)*	-	*(0.314)*
(Young Person) How many times gone out with friends in last 7 days (Base case: None)					
Once or twice	-	-	-0.140	-	-0.154
	-	-	*(0.160)*	-	*(0.174)*
Three to five	-	-	-0.229	-	-0.148
	-	-	*(0.186)*	-	*(0.205)*
Six to seven	-	-	-0.640***	-	-0.454*
	-	-	*(0.237)*	-	*(0.259)*
(Young Person) Whether been to or done in last 4 weeks (2): Just hung around, messed about near to your home (Base case: Not mentioned)					
Mentioned	-	-	-0.257**	-	-0.216*
	-	-	*(0.117)*	-	*(0.126)*
SOCIAL CAPITAL AT HOME VARIABLES					
(Main Parent) What would like young person to do when reach school leaving age (Base case: Get a FT job)					
Learn a trade/skill	-	-	-	-	0.440
	-	-	-	-	*(0.790)*
Continue in FT education	-	-	-	-	0.947
	-	-	-	-	*(0.763)*
(Young Person) How often talk about plans for future study with - Members of family (Base case: Never)					
Not very often	-	-	-	-	-0.199
	-	-	-	-	*(0.440)*
A little	-	-	-	-	-0.111
	-	-	-	-	*(0.397)*
Quite a lot	-	-	-	-	-0.007
	-	-	-	-	*(0.399)*
A lot	-	-	-	-	0.120
	-	-	-	-	*(0.433)*
(Young Person) Whether anyone at home makes sure that do homework (Base case: Never)					
Occasionally	-	-	-	-	0.006
	-	-	-	-	*(0.251)*
Sometimes	-	-	-	-	-0.025
	-	-	-	-	*(0.214)*
Every time	-	-	-	-	-0.454**
	-	-	-	-	*(0.215)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Young Person) How often parents know where going when out in evening (Base case: Never)					
Rarely	-	-	-	-	0.717
	-	-	-	-	*(1.352)*
Sometimes	-	-	-	-	0.759
	-	-	-	-	*(1.318)*
Usually	-	-	-	-	0.740
	-	-	-	-	*(1.317)*
Always	-	-	-	-	0.776
	-	-	-	-	*(1.309)*
Home	-	-	-	-	1.213
	-	-	-	-	*(1.336)*
(Young Person) How often parents talk to young person about day at school (Base case: Never)					
Sometimes	-	-	-	-	0.321
	-	-	-	-	*(0.317)*
Often	-	-	-	-	0.436
	-	-	-	-	*(0.326)*
(Main Parent) How well get on with young person (Base case: Badly)					
Well	-	-	-	-	-0.591
	-	-	-	-	*(0.623)*
(Young Person) How well get on with (step-) mother/father (Base case: Badly)					
Well	-	-	-	-	0.759
	-	-	-	-	*(0.570)*
(Young Person) How often talk to (step-) mother/father about things that matter to young person (Base case: Never)					
Hardly ever	-	-	-	-	-1.090**
	-	-	-	-	*(0.469)*
Less than once a week	-	-	-	-	-0.966**
	-	-	-	-	*(0.463)*
Once a week on average	-	-	-	-	-1.167**
	-	-	-	-	*(0.461)*
Most days	-	-	-	-	-1.083**
	-	-	-	-	*(0.459)*
(Young Person) How many times eaten evening meal with family in last 7 days (Base case: None)					
One to two days a week	-	-	-	-	0.917***
	-	-	-	-	*(0.258)*
Three to five days a week	-	-	-	-	1.082***
	-	-	-	-	*(0.255)*
Six to seven days a week	-	-	-	-	1.055***
	-	-	-	-	*(0.250)*
SOCIAL CAPITAL AT SCHOOL VARIABLES					
(Young Person) How many of young person's teachers who set homework make sure young person does it (Base case: None)					
Hardly any	-	-	-	-	-0.094
	-	-	-	-	*(0.711)*
Some	-	-	-	-	-0.046
	-	-	-	-	*(0.643)*
Most	-	-	-	-	0.307
	-	-	-	-	*(0.644)*
All	-	-	-	-	0.393
	-	-	-	-	*(0.645)*
(Main Parent) Whether had any specially arranged meetings with teachers about young person's schooling (Base case: Yes)					
No	-	-	-	-	-0.101
	-	-	-	-	*(0.152)*

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
(Main Parent) How often speak to young person's teachers about schooling (Base case: Never)					
Less than once a term	-	-	-	-	-0.003
	-	-	-	-	*(0.143)*
Once a term on average	-	-	-	-	-0.037
	-	-	-	-	*(0.163)*
Every two to three weeks	-	-	-	-	-0.667
	-	-	-	-	*(0.473)*
Once a week	-	-	-	-	-0.576
	-	-	-	-	*(0.477)*
(Main Parent) Satisfaction with: how much interest the teachers show in young person (Base case: Very dissatisfied)					
Fairly dissatisfied	-	-	-	-	0.478
	-	-	-	-	*(0.575)*
Fairly satisfied	-	-	-	-	0.704
	-	-	-	-	*(0.537)*
Very satisfied	-	-	-	-	0.978*
	-	-	-	-	*(0.540)*
(Main Parent) How involved does main parent personally feel in young person's school life (Base case: Not at all involved)					
Not very involved	-	-	-	-	-0.409
	-	-	-	-	*(0.335)*
Fairly involved	-	-	-	-	-0.495
	-	-	-	-	*(0.322)*
Very involved	-	-	-	-	-0.427
	-	-	-	-	*(0.337)*
(Main Parent) Frequency of Main parent talking to young person about report (Base case: Less than every time a report comes)					
Every time a report comes	-	-	-	-	0.141
	-	-	-	-	*(0.376)*
(Main Parent) Activities they or partner get involved in: Help out in class (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.579
	-	-	-	-	*(0.931)*
(Main Parent) Activities they or partner get involved in: Help out elsewhere e.g. library, school trips, dinner duty (Base case: Not mentioned)					
Mentioned	-	-	-	-	-0.439
	-	-	-	-	*(0.359)*
(Main Parent) Activities they or partner get involved in: Get involved in parents and teachers associations (Base case: Not mentioned)					
Mentioned	-	-	-	-	0.027
	-	-	-	-	*(0.268)*
(Main Parent) Activities they or partner get involved in: School, parent governor (Base case: Not mentioned)					
Mentioned	-	-	-	-	-0.382
	-	-	-	-	*(0.531)*
CONSTANT					
Constant	-2.334***	-2.140***	-2.522***	-2.001***	-8.123***
	(0.320)	*(0.325)*	*(0.481)*	*(0.330)*	*(2.114)*
REGRESSION STATISTICS					
n.	2,498	2,498	2,498	2,498	2,498
Log pseudo-likelihood	-1,179.65	-1,159.26	-1,135.55	-1,097.13	-1,036.36
	(45)	(48)	(67)	(57)	(131)
Wald X^2	606.20	620.71	630.21	635.47	708.70
Prob > X^2	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.2876	0.2999	0.3143	0.3375	0.3742
Iterations	4	4	4	4	5
GOODNESS-OF-FIT TESTS					
F(9, 2489)	1.54	1.67	0.92	0.95	2.81
Prob > F	0.1267	0.0908	0.5038	0.4809	0.0028

8.17 (Continued)

	Empirical Estimations				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
AKAIKE AND BAYESIAN INFORMATION CRITERION					
Log-likelihood (Null)	-1,655.94	-1,655.94	-1,655.94	-1,655.94	-1,655.94
Log-likelihood (Model)	-1,179.65	-1,159.26	-1,135.55	-1,097.13	-1,036.36
Degrees of Freedom	46	49	68	58	132
AIC	2,451.30	2,416.53	2,407.11	2,310.26	2,336.71
BIC	2,719.17	2,701.86	2,803.09	2,648.01	3,105.38

[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.18 Marginal effects at representative values computed from our preferred logistic regression output which estimates the influences on Higher Education participation for our estimation sample using the Longitudinal Study of Young People in England 2004

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
CONTROL VARIABLES	
Gender - Dummy variable (Base case: Female)	
Male	-0.037 *(0.017)*
Month/year of Birth - Dummy variables (Base case: Sept'89 to Nov'89)	
Dec'89 to Aug'90	0.059 *(0.017)*
Single parent household - Dummy variables (Base case: No)	
Yes - Single parent household	-0.010 *(0.021)*
Missing	0.004 *(0.159)*
Household Income - Work, benefits and anything else for main parent and second parent	
£s per annum	0.000 *(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)	
Managerial & professional	0.100 *(0.039)*
Intermediate	0.097 *(0.047)*
Small employers & own account workers	0.060 *(0.040)*
Lower supervisory & technical occupations	0.018 *(0.035)*
Semi-routine	0.046 *(0.040)*
Unemployed	0.036 *(0.063)*
Household representative not present	-0.070 *(0.097)*
Household representative not mother/father	-0.081 *(0.070)*
Not applicable	0.052 *(0.084)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)	
HE undergraduate degree or higher	0.192 *(0.033)*
Lesser HE	0.080 *(0.027)*
A-Level	0.019 *(0.023)*
Other	-0.075 *(0.045)*
Level 1	-0.052 *(0.034)*
None	-0.006 *(0.034)*

8.18 (Continued)

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
Government Office Region - Dummy variables (Base case: South East)	
North	0.157 *(0.035)*
York and the Humber	0.091 *(0.037)*
Midlands	0.078 *(0.023)*
East of England	0.088 *(0.033)*
London	0.109 *(0.038)*
South West	0.051 *(0.035)*
Index of Multiple Deprivation 4 Quantiles (Base case: High)	
High-Medium	0.040 *(0.022)*
Low-Medium	0.084 *(0.030)*
Low	0.133 *(0.033)*
Key Skills	
Technical Skill (1st order)	0.122 *(0.016)*
Gifted & Talented	0.015 *(0.010)*
Literacy Skill	0.046 *(0.011)*
Disability - Dummy variables (Base case: No)	
Yes - Schooling affected	-0.029 *(0.036)*
Yes - Schooling not affected	-0.016 *(0.027)*
Ethnic Group - Dummy variables (Base case: White-British)	
Indian subcontinent	0.425 *(0.038)*
Black-Caribbean	0.086 *(0.064)*
Black-African	0.418 *(0.093)*
Mixed	0.041 *(0.043)*
Other	0.23 *(0.069)*
First language - Dummy variables (Base case: English)	
Bilingual	0.102 *(0.078)*
Other	0.072 *(0.071)*
Extra-tuition in subjects studied at school - Dummy variable (Base case: No)	
Yes - Extra tuition received	0.058 *(0.025)*
Extra-tuition in supplementary subjects - Dummy variable (Base case: No)	
Yes - Extra tuition received	0.038 *(0.020)*
Older siblings	
(*n.*)	-0.015 *(0.009)*
Younger siblings	
(*n.*)	-0.015 *(0.008)*

8.18 (Continued)

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS	
Cultural Capital	
Cultural Capital	0.025 *(0.009)*
Habitus	
Academic Self-Perception	0.034 *(0.010)*
Aspirations for Further Study	0.101 *(0.016)*
Social Capital – young person networks	
Outgoing	-0.032 *(0.008)*
Social Participation	-0.004 *(0.008)*
Social Capital at home	
Parent-Young Person Connectivity	-0.006 *(0.008)*
Parental Aspirations for Young Person	0.058 *(0.011)*
Parent-Young Person Concurrence	0.012 *(0.007)*
Social Capital at school	
Parent-School Connectivity	-0.036 *(0.009)*
Parental Assessment of Schooling	0.035 *(0.008)*
Parental Participation in School Activities	0.003 *(0.009)*
Parental Involvement in School Governance	-0.001 *(0.008)*
n.	4,817

8.19 Comparison of our preferred versus a multi-level specification estimating the influences on Higher Education participation using a sample derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations	
	(4) $YP_i, BG_i, KS_i, CC_i,$ $HAB_i, SCYPNET_i,$ $SCHM_i, SCSCH_i$ (PCA)	**(6)** $YP_{ij}, BG_{ij}, KS_{ij}, CC_{ij},$ $HAB_{ij}, SCYPNET_{ij},$ $SCHM_{ij}, SCSCH_{ij}$ (PCA)
	Single-level	Multi-level
Sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
CONTROL VARIABLES		
Gender - Dummy variable (Base case: Female)		
Male	-0.191**	-0.210**
	(0.087)	*(0.085)*
Month/year of Birth - Dummy variables (Base case: Sept'89 to Nov'89)		
Dec'89 to Aug'90	0.341***	0.365***
	(0.094)	*(0.094)*
Single parent household - Dummy variables (Base case: No)		
Yes - Single parent household	-0.063	-0.054
	(0.117)	*(0.120)*
Missing	0.021	0.080
	(0.830)	*(0.880)*
Imputed Household Income - Work, benefits and anything else for main parent and second parent		
£s per annum	0.000	0.000
	(0.000)	*(0.000)*
Imputed family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)		
Managerial/professional	0.462***	0.469***
	(0.167)	*(0.170)*
Intermediate	0.464**	0.460**
	(0.203)	*(0.209)*
Small employers/own account workers	0.279	0.265
	(0.184)	*(0.187)*
Lower Supervisory/technical	0.109	0.097
	(0.187)	*(0.192)*
Semi-routine	0.246	0.239
	(0.191)	*(0.199)*
Unemployed	0.174	0.177
	(0.304)	*(0.318)*
Household representative not present	-0.426	-0.399
	(0.647)	*(0.661)*
Household representative not mother/father	-0.486	-0.546
	(0.488)	*(0.502)*
Not applicable	0.242	0.196
	(0.401)	*(0.417)*
Imputed family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)		
HE undergraduate degree or higher	0.844***	0.824***
	(0.135)	*(0.146)*
Lesser HE	0.393***	0.382***
	(0.125)	*(0.126)*
A-Level	0.085	0.074
	(0.120)	*(0.126)*
Other	-0.451	-0.481
	(0.297)	*(0.335)*
Level 1	-0.295	-0.325
	(0.207)	*(0.216)*
None	-0.032	-0.046
	(0.182)	*(0.183)*

8.19 (Continued)

	Empirical Estimations	
	(4)	**(6)**
	Single-level	Multi-level
Sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
Government Office Region - Dummy variables (Base case: South East)		
North	0.722***	0.748***
	(0.142)	*(0.167)*
York and the Humber	0.426***	0.430**
	(0.164)	*(0.170)*
Midlands	0.485***	0.511***
	(0.133)	*(0.150)*
East of England	0.413***	0.426***
	(0.148)	*(0.154)*
London	0.533***	0.532***
	(0.159)	*(0.178)*
South West	0.235	0.260
	(0.167)	*(0.173)*
Index of Multiple Deprivation 4 Quantiles (Base case: High)		
High-Medium	0.247**	0.243*
	(0.123)	*(0.126)*
Low-Medium	0.450***	0.473***
	(0.131)	*(0.140)*
Low	0.656***	0.677***
	(0.134)	*(0.141)*
Key Skills		
Technical Skill (1st order)	0.638***	0.650***
	(0.061)	*(0.062)*
Technical Skill (2nd order)	0.052	0.050
	(0.043)	*(0.045)*
Gifted & Talented	0.061	0.056
	(0.050)	*(0.050)*
Literacy Skill	0.245***	0.244***
	(0.050)	*(0.055)*
Disability - Dummy variables (Base case: No)		
Yes - Schooling affected	-0.162	-0.151
	(0.207)	*(0.224)*
Yes - Schooling not affected	-0.082	-0.084
	(0.151)	*(0.156)*
Ethnic Group - Dummy variables (Base case: White-British)		
Indian subcontinent	1.827***	1.888***
	(0.174)	*(0.183)*
Black-Caribbean	0.275	0.275
	(0.278)	*(0.295)*
Black-African	1.996***	2.063***
	(0.378)	*(0.381)*
Mixed	0.107	0.137
	(0.208)	*(0.214)*
Other	1.034***	1.076***
	(0.274)	*(0.275)*
Derived first language - Dummy variables (Base case: English)		
Bilingual	0.472	0.479
	(0.333)	*(0.336)*
Other	0.296	0.308
	(0.323)	*(0.352)*
Extra-tuition in subjects studied at school - Dummy variable (Base case: No)		
Yes - Extra tuition received	0.274**	0.272**
	(0.117)	*(0.122)*
Extra-tuition in supplementary subjects - Dummy variable (Base case: No)		
Yes - Extra tuition received	0.184*	0.185*
	(0.099)	*(0.104)*
Older siblings		
(*n.*)	-0.073	-0.082*
	(0.045)	*(0.046)*

8.19 (Continued)

	Empirical Estimations	
	(4)	**(6)**
	Single-level	Multi-level
Sample	Coef. (β) *(s.e.)*	Coef. (β) *(s.e.)*
Younger siblings		
(*n.*)	-0.079*	-0.081*
	(0.044)	*(0.046)*
CULTURAL CAPITAL, HABITUS and SOCIAL CAPITAL PRINCIPAL COMPONENTS		
Cultural Capital		
Cultural Capital	0.145***	0.151***
	(0.044)	*(0.047)*
Habitus		
Academic Self-Perception	0.186***	0.195***
	(0.048)	*(0.051)*
Aspirations for Further Study	0.534***	0.551***
	(0.065)	*(0.062)*
Social Capital – young person networks		
Outgoing	-0.166***	-0.173***
	(0.042)	*(0.046)*
Social Participation	-0.033	-0.034
	(0.040)	*(0.040)*
Social Capital at home		
Parent-Young Person Connectivity	-0.042	-0.041
	(0.042)	*(0.043)*
Parental Aspirations for Young Person	0.306***	0.310***
	(0.049)	*(0.051)*
Parent-Young Person Concurrence	0.071*	0.070*
	(0.040)	*(0.040)*
Social Capital at school		
Parent-School Connectivity	-0.178***	-0.178***
	(0.042)	*(0.043)*
Parental Assessment of Schooling	0.180***	0.177***
	(0.042)	*(0.044)*
Parental Participation in School Activities	0.014	0.015
	(0.046)	*(0.045)*
Parental Involvement in School Governance	-0.003	-0.003
	(0.042)	*(0.043)*
CONSTANT		
Constant	-2.081***	0.154**
	(0.246)	*(0.062)*
RANDOM EFFECTS		
Var(_cons)	-	0.154
	-	*(0.062)*
REGRESSION STATISTICS		
Pupils (*n.*)	4,788	4,788
Population (*p.*)	4,641	-
Schools (*s.*)	-	612
Iterations	5	5
Integration Method	-	mvaghermite
Iteration Points	-	3
Log pseudo-likelihood	-2039.35	-2035.03
Fixed Effect (It.)	-	-2039.35 (4)
Starting Values (It.)	-	-2074.05 (0)
Full Model (It.)	-	-2035.03 (5)
Wald Chi^2(x)	(58) 1155.65	(58) 1018.01
Prob > Ch^{i2}	0.0000	0.0000
Pseudo R^2	0.3472	-

[* $p \leq 0.10$, ** $0.01 < p \leq 0.05$, *** $p \leq 0.01$]

8.20 Principal Components Analysis summary: descriptive statistics and component matrices for our Key Skill principal components *(KS_i)* - A proxy for cognitive ability

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		12 items	12 items	12 items
Determinant of the correlation matrix*		0.001	0.001	0.001
Kaiser-Meyer-Olkin (KMO)**		0.909	0.910	0.914
Individual KMO items***		≥0.814	≥0.818	≥0.798
Bartlett's Test of Sphericity	Approx. Chi-Square	31,151.636	15,443.036	15,885.006
	d.f.	66	66	66
	Sig.	0.000	0.000	0.000
Rotation		Direct Oblimin	Direct Oblimin	Direct Oblimin
Number of components extracted		3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		69.455	70.021	68.839
Eigenvalue****		1.039	1.026	0.919
Percentage of non-redundant residuals > 0.05*****		33.0%	37.0%	34.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.20 (Continued)

	Pattern Matrices		
LSYPE	**Technical Skill**	**Gifted & Talented**	**Literacy Skill**
Sample			
KS2 English Test - Writing Score	0.285	0.079	0.617
KS2 English Test - Reading Score	0.661	0.017	0.300
KS2 English Test - Handwriting Score	-0.110	-0.008	0.876
KS2 English Test - Spelling Score	0.389	0.020	0.515
KS2 Mathematics Test - Paper 1 Score	0.877	0.045	0.032
KS2 Mathematics Test - Paper 2 Score	0.916	0.029	-0.038
KS2 Mathematics Test - Mental Arithmetic Score	0.850	0.017	0.016
KS2 Science Test - Paper A Score	0.867	-0.010	-0.039
KS2 Science Test - Paper B Score	0.895	-0.019	-0.054
KS2 English - Extension paper attempted	-0.090	0.776	0.160
KS2 Mathematics - Extension paper attempted	0.128	0.740	-0.074
KS2 Science - Extension paper attempted	-0.021	0.783	-0.079
Component	(1)	(2)	(3)
Male subsample			
KS2 English Test - Writing Score	0.367	0.101	0.522
KS2 English Test - Reading Score	0.745	0.031	0.181
KS2 English Test - Handwriting Score	-0.096	-0.013	0.899
KS2 English Test - Spelling Score	0.394	0.035	0.525
KS2 Mathematics Test - Paper 1 Score	0.847	0.045	0.081
KS2 Mathematics Test - Paper 2 Score	0.893	0.018	0.017
KS2 Mathematics Test - Mental Arithmetic Score	0.805	-0.002	0.116
KS2 Science Test - Paper A Score	0.910	0.004	-0.136
KS2 Science Test - Paper B Score	0.929	-0.022	-0.119
KS2 English - Extension paper attempted	-0.090	0.781	0.095
KS2 Mathematics - Extension paper attempted	0.086	0.755	0.007
KS2 Science - Extension paper attempted	0.007	0.782	-0.117
Component	(1)	(2)	(3)
Female subsample			
KS2 English Test - Writing Score	0.365	0.072	0.520
KS2 English Test - Reading Score	0.713	0.014	0.219
KS2 English Test - Handwriting Score	-0.074	0.005	0.891
KS2 English Test - Spelling Score	0.468	0.007	0.414
KS2 Mathematics Test - Paper 1 Score	0.887	0.039	0.011
KS2 Mathematics Test - Paper 2 Score	0.907	0.032	-0.038
KS2 Mathematics Test - Mental Arithmetic Score	0.848	0.024	0.014
KS2 Science Test - Paper A Score	0.889	-0.020	-0.077
KS2 Science Test - Paper B Score	0.894	-0.015	-0.064
KS2 English - Extension paper attempted	-0.037	0.795	0.123
KS2 Mathematics - Extension paper attempted	0.120	0.727	-0.094
KS2 Science - Extension paper attempted	-0.066	0.777	-0.027
Component	(1)	(2)	(3)

8.20 (Continued)

LSYPE	Structure Matrices Technical Skill	Gifted & Talented	Literacy Skill
Sample			
KS2 English Test - Writing Score	0.578	0.285	0.756
KS2 English Test - Reading Score	0.797	0.283	0.591
KS2 English Test - Handwriting Score	0.268	0.121	0.827
KS2 English Test - Spelling Score	0.619	0.240	0.688
KS2 Mathematics Test - Paper 1 Score	0.905	0.328	0.421
KS2 Mathematics Test - Paper 2 Score	0.908	0.312	0.365
KS2 Mathematics Test - Mental Arithmetic Score	0.862	0.288	0.388
KS2 Science Test - Paper A Score	0.847	0.257	0.336
KS2 Science Test - Paper B Score	0.866	0.254	0.332
KS2 English - Extension paper attempted	0.225	0.778	0.267
KS2 Mathematics - Extension paper attempted	0.330	0.767	0.121
KS2 Science - Extension paper attempted	0.193	0.761	0.059
Component	(1)	(2)	(3)
Male subsample			
KS2 English Test - Writing Score	0.615	0.321	0.693
KS2 English Test - Reading Score	0.829	0.308	0.494
KS2 English Test - Handwriting Score	0.270	0.129	0.857
KS2 English Test - Spelling Score	0.622	0.265	0.695
KS2 Mathematics Test - Paper 1 Score	0.895	0.336	0.438
KS2 Mathematics Test - Paper 2 Score	0.906	0.312	0.389
KS2 Mathematics Test - Mental Arithmetic Score	0.852	0.282	0.448
KS2 Science Test - Paper A Score	0.855	0.273	0.240
KS2 Science Test - Paper B Score	0.873	0.257	0.260
KS2 English - Extension paper attempted	0.203	0.769	0.208
KS2 Mathematics - Extension paper attempted	0.335	0.784	0.189
KS2 Science - Extension paper attempted	0.213	0.762	0.037
Component	(1)	(2)	(3)
Female subsample			
KS2 English Test - Writing Score	0.616	0.277	0.692
KS2 English Test - Reading Score	0.813	0.278	0.532
KS2 English Test - Handwriting Score	0.317	0.134	0.860
KS2 English Test - Spelling Score	0.651	0.226	0.620
KS2 Mathematics Test - Paper 1 Score	0.904	0.323	0.406
KS2 Mathematics Test - Paper 2 Score	0.900	0.314	0.364
KS2 Mathematics Test - Mental Arithmetic Score	0.862	0.296	0.389
KS2 Science Test - Paper A Score	0.849	0.249	0.308
KS2 Science Test - Paper B Score	0.861	0.258	0.324
KS2 English - Extension paper attempted	0.270	0.804	0.243
KS2 Mathematics - Extension paper attempted	0.310	0.749	0.083
KS2 Science - Extension paper attempted	0.169	0.751	0.077
Component	(1)	(2)	(3)

8.21 Principal Components Analysis summary: descriptive statistics and component matrices for our Cultural Capital principal components *(CC_i)*

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		3 Items	3 Items	3 Items
Determinant of the correlation matrix*		0.962	0.965	0.961
Kaiser-Meyer-Olkin (KMO)**		0.553	0.552	0.540
Individual KMO items***		≥0.549	≥0.547	≥0.530
Bartlett's Test of Sphericity	Approx. Chi-Square	164.403	74.716	89.152
	d.f.	3	3	3
	Sig.	0.000	0.000	0.000
Rotation		N/A	N/A	N/A
Number of components extracted		1	1	1
Scores method		Regression	Regression	Regression
Cumulative variance explained		41.080	40.849	41.010
Eigenvalue****		1.232	1.225	1.230
Percentage of non-redundant residuals > 0.05*****		100.0%	100.0%	100.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

	Component Matrices		
LSYPE	**Sample**	**Male subsample**	**Female subsample**
Young person: Frequency of reading for pleasure	0.649	0.657	0.622
Young person: Whether been to or done in last 4 weeks: Gone to a cinema, theatre or concert	0.614	0.613	0.580
Young person: Whether been to or done in last 4 weeks: Played a musical instrument	0.659	0.646	0.712

8.22 Principal Components Analysis summary: descriptive statistics and component matrices for our Habitus principal components *(HAB_i)*

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		8 Items	8 Items	8 Items
Determinant of the correlation matrix*		0.196	0.177	0.209
Kaiser-Meyer-Olkin (KMO)**		0.766	0.786	0.751
Individual KMO items***		≥0.689	≥0.741	≥0.638
Bartlett's Test of Sphericity	Approx. Chi-Square	6,980.374	3,573.455	3,461.138
	d.f.	28	28	28
	Sig.	0.000	0.000	0.000
Rotation		Direct Oblimin	Direct Oblimin	Direct Oblimin
Number of components extracted		2	2	2
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		48.771	49.463	48.065
Eigenvalue****		1.066	1.006	1.087
Percentage of non-redundant residuals > 0.05*****		75.0%	67.0%	71.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb,

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.22 (Continued)

	Pattern Matrices	
LSYPE	**Academic Self-Perception**	**Aspirations for Further Study**
Sample		
Young person: Young person's intentions after Year 11	-0.148	0.876
Young person: Likelihood of young person getting into university if apply	0.266	0.680
Young person: How good young person thinks young person is at school work	0.789	0.171
Young person: How good teachers think young person is at school work	0.764	0.152
Young person: How good or bad at this subject: Mathematics	0.596	0.034
Young person: How good or bad at this subject: English	0.352	0.303
Young person: How good or bad at this subject: Science	0.592	-0.031
Young person: How good or bad at this subject: ICT	0.461	-0.184
Component	(1)	(2)
Male subsample		
Young person: Young person's intentions after Year 11	-0.172	0.917
Young person: Likelihood of young person getting into university if apply	0.210	0.701
Young person: How good young person thinks young person is at school work	0.809	0.110
Young person: How good teachers think young person is at school work	0.814	0.059
Young person: How good or bad at this subject: Mathematics	0.613	0.017
Young person: How good or bad at this subject: English	0.289	0.340
Young person: How good or bad at this subject: Science	0.595	-0.045
Young person: How good or bad at this subject: ICT	0.387	-0.047
Component	(1)	(2)
Female subsample		
Young person: Young person's intentions after Year 11	-0.129	0.916
Young person: Likelihood of young person getting into university if apply	0.365	0.584
Young person: How good young person thinks young person is at school work	0.854	-0.008
Young person: How good teachers think young person is at school work	0.842	-0.063
Young person: How good or bad at this subject: Mathematics	0.480	0.199
Young person: How good or bad at this subject: English	0.610	-0.147
Young person: How good or bad at this subject: Science	0.530	0.043
Young person: How good or bad at this subject: ICT	0.301	0.023
Component	(1)	(2)

8.22 (Continued)

	Structure Matrices	
LSYPE	**Academic Self-Perception**	**Aspirations for Further Study**
Sample		
Young person: Young person's intentions after Year 11	0.055	0.842
Young person: Likelihood of young person getting into university if apply	0.423	0.741
Young person: How good young person thinks young person is at school work	0.829	0.353
Young person: How good teachers think young person is at school work	0.799	0.328
Young person: How good or bad at this subject: Mathematics	0.604	0.171
Young person: How good or bad at this subject: English	0.422	0.384
Young person: How good or bad at this subject: Science	0.585	0.106
Young person: How good or bad at this subject: ICT	0.419	-0.077
Component	(1)	(2)
Male subsample		
Young person: Young person's intentions after Year 11	0.159	0.854
Young person: Likelihood of young person getting into university if apply	0.463	0.777
Young person: How good young person thinks young person is at school work	0.849	0.403
Young person: How good teachers think young person is at school work	0.835	0.353
Young person: How good or bad at this subject: Mathematics	0.619	0.239
Young person: How good or bad at this subject: English	0.412	0.444
Young person: How good or bad at this subject: Science	0.578	0.170
Young person: How good or bad at this subject: ICT	0.370	0.093
Component	(1)	(2)
Female subsample		
Young person: Young person's intentions after Year 11	0.097	0.884
Young person: Likelihood of young person getting into university if apply	0.509	0.674
Young person: How good young person thinks young person is at school work	0.853	0.204
Young person: How good teachers think young person is at school work	0.826	0.145
Young person: How good or bad at this subject: Mathematics	0.530	0.318
Young person: How good or bad at this subject: English	0.573	0.004
Young person: How good or bad at this subject: Science	0.541	0.174
Young person: How good or bad at this subject: ICT	0.306	0.097
Component	(1)	(2)

8.23 Principal Components Analysis summary: descriptive statistics and component matrices for our Social Capital principal components - young person networks *($SCYPNET_i$)*

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		7 Items	7 Items	7 Items
Determinant of the correlation matrix*		0.577	0.622	0.518
Kaiser-Meyer-Olkin (KMO)**		0.638	0.638	0.645
Individual KMO items***		≥0.567	≥0.501	≥0.603
Bartlett's Test of Sphericity	Approx. Chi-Square	2,353.872	981.434	1,.457.765
	d.f.	21	21	21
	Sig.	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax
Number of components extracted		2	2	2
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		42.364	41.835	43.548
Eigenvalue****		1.062	1.075	1.066
Percentage of non-redundant residuals > 0.05*****		76.0%	66.0%	71.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.23 (Continued)

	Rotated Component Matrices	
LSYPE	**Outgoing**	**Social Participation**
Sample		
Young person: Frequency of doing sports	0.255	0.191
Young person: Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.387	0.150
Young person: Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.020	0.678
Young person: Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.070	0.736
Young person: How many times young person had friends round to house in last 7 days	0.763	0.013
Young person: How many times gone out with friends in last 7 days	0.829	0.039
Young person: Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.632	-0.121
Component	(1)	(2)
Male subsample		
Young person: Frequency of doing sports	0.374	0.052
Young person: Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.325	0.331
Young person: Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.087	0.678
Young person: Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.047	0.713
Young person: How many times young person had friends round to house in last 7 days	0.728	0.020
Young person: How many times gone out with friends in last 7 days	0.815	0.054
Young person: Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.623	-0.078
Component	(1)	(2)
Female subsample		
Young person: Frequency of doing sports	0.086	0.487
Young person: Whether been to or done in last 4 weeks: Gone to a party, dance, nightclub or disco	0.435	0.255
Young person: Whether been to or done in last 4 weeks: Gone to a political meeting, march, rally or demonstration	-0.007	0.552
Young person: Whether been to or done in last 4 weeks: Gone to a youth club or something like it (including scouts or girl guides)	0.019	0.698
Young person: How many times young person had friends round to house in last 7 days	0.790	0.048
Young person: How many times gone out with friends in last 7 days	0.841	0.073
Young person: Whether been to or done in last 4 weeks: Just hung around, messed about near to your home	0.639	-0.096
Component	(1)	(2)

8.24 Principal Components Analysis summary: descriptive statistics and components matrices for our Social Capital principal components at home *(SCHM$_i$)*

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		9 Items	9 Items	9 Items
Determinant of the correlation matrix*		0.637	0.677	0.580
Kaiser-Meyer-Olkin (KMO)**		0.695	0.668	0.710
Individual KMO items***		≥0.575	≥0.580	≥0.512
Bartlett's Test of Sphericity	Approx. Chi-Square	1,932.292	806.091	1204.881
	d.f.	36	36	36
	Sig.	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax
Number of components extracted		3	3	3
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		45.607	44.759	47.033
Eigenvalue****		1.033	1.037	1.030
Percentage of non-redundant residuals > 0.05*****		69.0%	66.0%	72.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.24 (Continued)

	Rotated Components Matrix		
LSYPE	**Parent-Young Person Connectivity**	**Parental Aspirations for Young Person**	**Parent-Child Concurrence**
	Sample		
Main parent: What would like young person to do when reach school leaving age	-0.150	0.756	-0.145
Young person: How often talk about plans for future study with - Members of family	0.661	0.050	-0.025
Young person: Whether anyone at home makes sure that do homework	0.519	0.051	-0.041
Young person: How often parents know where going when out in evening	0.181	0.563	0.137
Young person: How often parents talk to young person about day at school	0.572	0.253	0.095
Main parent: How well get on with young person	-0.070	0.068	0.753
Young person: How well get on with parents	0.103	0.031	0.736
Young person: Talk to parents about important issues	0.734	0.010	0.088
Young person: How many times eaten evening meal with family in last 7 days	0.264	0.493	0.131
Component	(1)	(2)	(3)
	Male subsample		
Main parent: What would like young person to do when reach school leaving age	-0.107	0.697	0.009
Young person: How often talk about plans for future study with - Members of family	0.678	-0.033	-0.059
Young person: Whether anyone at home makes sure that do homework	0.510	0.116	0.029
Young person: How often parents know where going when out in evening	0.145	0.659	-0.068
Young person: How often parents talk to young person about day at school	0.540	0.229	0.123
Main parent: How well get on with young person	0.023	0.049	0.719
Young person: How well get on with parents	0.028	-0.007	0.760
Young person: Talk to parents about important issues	0.757	-0.033	0.021
Young person: How many times eaten evening meal with family in last 7 days	0.256	0.440	0.203
Component	(1)	(2)	(3)
	Female subsample		
Main parent: What would like young person to do when reach school leaving age	-0.175	0.771	-0.168
Young person: How often talk about plans for future study with - Members of family	0.641	0.063	0.033
Young person: Whether anyone at home makes sure that do homework	0.534	0.045	-0.099
Young person: How often parents know where going when out in evening	0.237	0.477	0.261
Young person: How often parents talk to young person about day at school	0.605	0.270	0.060
Main parent: How well get on with young person	-0.126	0.036	0.761
Young person: How well get on with parents	0.148	0.041	0.726
Young person: Talk to parents about important issues	0.722	-0.016	0.135
Young person: How many times eaten evening meal with family in last 7 days	0.291	0.537	0.111
Component	(1)	(3)	(2)

8.25 Principal Components Analysis summary: descriptive statistics and component matrices for our Social Capital principal components at school *($SCSCH_i$)*

		PCA Descriptive Statistics		
LSYPE		**Sample**	**Male subsample**	**Female subsample**
Obs.		4,289	2,071	2,218
PCA		10 Items	10 Items	10 Items
Determinant of the correlation matrix*		0.701	0.673	0.705
Kaiser-Meyer-Olkin (KMO)**		0.558	0.555	0.557
Individual KMO items***		≥0.517	≥0.479	≥0.508
Bartlett's Test of Sphericity	Approx. Chi-Square	1,523.284	818.675	773.573
	d.f.	45	45	45
	Sig.	0.000	0.000	0.000
Rotation		Varimax	Varimax	Varimax
Number of components extracted		4	4	4
Scores method		Anderson-Rubin	Anderson-Rubin	Anderson-Rubin
Cumulative variance explained		51.118	51.766	51.094
Eigenvalue****		1.013	1.006	1.038
Percentage of non-redundant residuals > 0.05*****		44.0%	48.0%	55.0%

*Should be greater than the necessary value of 0.00001.

**KMO < 0.5 is unacceptable, 0.5 ≥ KMO < 0.7 is mediocre, 0.7 ≥ KMO < 0.8 is good, 0.8 ≥ KMO < 0.9 is great and 0.9 ≥ KMO is superb.

***These should be greater than the necessary value of 0.5.

****For extracted coefficients this should exceed 0.9.

*****If the percentage of non-redundant residuals exceeds 50% this may give us cause for concern.

8.25 (Continued)

	Rotated Component Matrices			
LSYPE	**Parent-School Connectivity**	**Parental Assessment of Schooling**	**Parent-School Participation**	**Parental Involvement in School Governance**
Sample				
Young person: How many of young person's teachers who set homework make sure young person does it	-0.260	0.530	0.026	-0.143
Main parent: Whether had any specially arranged meetings with teachers about young person's schooling	0.774	-0.109	-0.034	-0.034
Main parent: How often speak to young person's teachers about schooling	0.783	0.029	0.104	-0.015
Main parent: Satisfaction with: how much interest the teachers show in young person	-0.056	0.768	0.007	0.038
Main parent: How involved does main parent personally feel in young person's school life	0.376	0.639	-0.004	0.178
Main parent: Frequency of main parent talking to young person about report	-0.047	0.012	-0.155	0.484
Main parent: Activities they or partner get involved in: Help out in class	0.073	0.027	0.755	-0.050
Main parent: Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	-0.011	-0.009	0.736	0.052
Main parent: Activities they or partner get involved in: Get involved in parents and teachers associations	-0.003	0.053	0.353	0.542
Main parent: Activities they or partner get involved in: School, parent governor	0.042	-0.025	0.047	0.720
Component	(1)	(2)	(3)	(4)
Male subsample				
Young person: How many of young person's teachers who set homework make sure young person does it	-0.286	0.464	0.090	-0.096
Main parent: Whether had any specially arranged meetings with teachers about young person's schooling	0.784	-0.070	-0.035	-0.048
Main parent: How often speak to young person's teachers about schooling	0.784	0.021	0.138	0.009
Main parent: Satisfaction with: how much interest the teachers show in young person	-0.091	0.772	0.007	0.041
Main parent: How involved does main parent personally feel in young person's school life	0.332	0.695	-0.060	0.129
Main parent: Frequency of main parent talking to young person about report	-0.008	-0.029	-0.424	0.667
Main parent: Activities they or partner get involved in: Help out in class	0.046	0.024	0.687	0.137
Main parent: Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	0.023	-0.001	0.665	0.081
Main parent: Activities they or partner get involved in: Get involved in parents and teachers associations	-0.029	0.056	0.299	0.604
Main parent: Activities they or partner get involved in: School, parent governor	0.016	0.028	0.286	0.525
Component	(1)	(2)	(3)	(4)

8.25 (Continued)

	Rotated Component Matrices			
LSYPE	**Parent-School Connectivity**	**Parental Assessment of Schooling**	**Parent-School Participation**	**Parental Involvement in School Governance**
Female subsample				
Young person: How many of young person's teachers who set homework make sure young person does it	-0.233	0.588	-0.040	-0.154
Main parent: Whether had any specially arranged meetings with teachers about young person's schooling	0.762	-0.148	-0.032	-0.028
Main parent: How often speak to young person's teachers about schooling	0.773	0.035	0.094	-0.055
Main parent: Satisfaction with: how much interest the teachers show in young person	-0.016	0.762	0.008	0.043
Main parent: How involved does main parent personally feel in young person's school life	0.429	0.574	0.061	0.217
Main parent: Frequency of main parent talking to young person about report	-0.085	0.025	0.054	0.432
Main parent: Activities they or partner get involved in: Help out in class	0.109	-0.001	0.722	-0.146
Main parent: Activities they or partner get involved in: Help out elsewhere, e.g. library, school trips, dinner duty	-0.046	-0.024	0.743	0.103
Main parent: Activities they or partner get involved in: Get involved in parents and teachers associations	0.035	0.054	0.430	0.407
Main parent: Activities they or partner get involved in: School, parent governor	0.083	-0.062	-0.107	0.792
Component	(1)	(3)	(2)	(4)

8.26 Weighted descriptive statistics for our estimation sample, male and female subsamples, derived from the Longitudinal Study of Young People in England 2004

		Sample		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Population size		2,442	1,660	1,260	739	1,182	921
n.		2,121	2,168	1,097	974	1,024	1,194
Respective rates of participation in HE (%)		59.53	40.47	63.03	36.97	56.21	43.79
Gender (Ages 13 to 18)	Male (%)	51.26*	44.53*	-	-	-	-
	Female (%)	48.74*	55.47*	-	-	-	-
Quarter of birth (Ages 13 to 20)	Sept-Nov'89 (%)	25.34	23.18	24.84	23.82	25.86	22.67
	Dec'89 to Aug'90 (%)	74.66	76.82	75.16	76.18	74.14	77.33
Single parent household (Age 13 to 14)	Yes (%)	25.70*	14.41*	22.22*	12.85*	29.42*	15.67*
	No (%)	74.30*	85.59*	77.78*	87.15*	70.58*	84.33*
Household income (Ages 13 to 16)	Mean (£ pa)	25,855*	36,131*	26,502*	37,163*	25,165*	35,303*
	10th Percentile (£ pa)	7,800	7,800	7,800	7,800	6,760	6,760
	25th Percentile (£ pa)	13,000	16,120	13,000	16,120	11,960	15,080
	50th Percentile (£ pa)	22,100	29,900	24,700	29,900	20,280	27,300
	75th Percentile (£ pa)	32,500	41,969	35,100	44,975	32,500	40,326
	90th Percentile (£ pa)	46,949	67,500	Restricted	72,500	Restricted	67,500
Family's National Statistics Socioeconomic Classification Class (Ages 13 to 16)	Managerial & professional (%)	30.38*	56.48*	29.15*	56.85*	31.69*	56.18*
	Intermediate (%)	7.83	8.10	7.61	8.34	8.06	7.90
	Small employers & own account workers (%)	13.22	11.49	13.73	13.02	12.69	10.26
	Lower supervisory & technical occupations (%)	14.63*	8.26*	15.93*	6.62*	13.25*	9.58*
	Semi-routine (%)	13.24*	7.08*	13.64*	7.75*	12.83*	6.54*
	Routine (%)	15.33*	5.09*	14.76*	4.75*	15.95*	5.36*
	Unemployed (%)	2.48	1.88	2.40	1.37	2.55*	2.29*
	Specific missing cases (%)	2.88	1.62	2.79	1.29	3.00	1.87
Family's highest educational qualification (Ages 13 to 16)	HE Degree or above (%)	9.52*	35.01*	9.60*	38.12*	9.44*	32.51*
	Lesser HE (%)	15.63*	21.37*	15.55*	21.05*	15.72*	21.64*
	A-Level (%)	21.88*	17.18*	23.01*	16.03*	20.67	18.10
	GCSE (5 A*-C) (%)	32.44*	18.53*	31.25*	16.66*	33.70*	20.03*
	Other (%)	1.94*	0.71*	1.92*	0.76*	1.95*	0.68*
	Level 1 (%)	7.78*	2.32*	8.10*	2.38*	7.44*	2.27*
	None (%)	10.82*	4.88*	10.56*	5.00*	11.09*	4.78*

8.26 (Continued)

		Sample		**Male subsample**		**Female subsample**	
		Non-participant	HE participant	Non-participant	HE participant	Non-participant	HE participant
Index of Multiple Deprivation	Low (%)	19.47*	33.29*	19.94*	32.55*	18.96*	33.89*
	Low-medium (%)	23.29*	27.40*	24.04*	28.84*	22.49*	26.25*
	High-medium (%)	26.65*	22.57*	26.70*	21.21*	26.60	23.75
	High (%)	30.59*	16.74*	29.32*	17.50*	31.94*	16.12*
Government office region (Age 13 to 14)	North (%)	18.38	18.58	19.34	19.44	17.36	17.89
	Yorkshire and the Humber (%)	9.10	8.53	9.63	7.36	8.54	9.47
	Midlands (%)	21.43	20.72	22.22	19.80	20.59	21.46
	East of England (%)	11.77	10.79	11.43	11.05	12.12	10.58
	London (%)	9.57*	16.87*	9.01*	16.20*	10.17*	17.41*
	South East (%)	17.74*	14.73*	16.42	16.19	19.14*	13.57*
	South West (%)	12.02*	9.78*	11.96	9.97	12.08	9.63
Ethnic grouping (Age 13 to 14)	White-British (%)	90.46*	81.27*	89.99*	82.30*	90.95*	80.45*
	Indian subcontinent (%)	2.18*	7.45*	2.47*	7.38*	1.86*	7.51*
	Black (%)	2.40	4.05	2.08	4.06	2.74	4.05
	Mixed ethnicity (%)	2.83	2.50	3.18	2.26	2.46	2.70
	Other (%)	2.14*	4.72*	2.28	4.01	1.98*	5.29*

** Indicates significance at the 5ppts level when conducting a mean-comparison Adjusted Wald Test.*

Table notes: Mean comparison significance adjusted Wald tests were conducted on a participant's gender, mean household income, familial social status, familial highest educational qualification, single parent household, IMD and ethnic grouping excluding specific missing cases. Those statistics containing less than 10 unweighted individual-level observations were either replaced with 'Restricted or categories were merged where this was not suitable. Categories merged included 'specific missing cases' for family's NS-SEC (household representative not present, not mother/father and not applicable) and the category 'black' with respect to ethnic grouping (black-African and Caribbean). As a result of these mergers, mean comparison significance adjusted Wald tests were not conducted.

8.27 Complete single and multi-level logistic regressions estimating the influence of school attended on Higher Education participation for our estimation sample, male and female subsamples derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations			
	(1) Weighted Logit	**(2) Weighted Logit - School Random Intercept**	**(3) (2) plus School-level Characteristics**	**(4) (3) plus Key Skill - Literacy Random Coefficient**
Sample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
INDIVIDUAL-LEVEL CONTROL VARIABLES				
Gender - Dummy variable (Base case: Female)				
Male	-0.162*	-0.179**	-0.219**	-0.234***
	(0.091)	*(0.089)*	*(0.088)*	*(0.090)*
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)				
Dec'89 to Aug'90	0.322***	0.348***	0.340***	0.347***
	(0.099)	*(0.098)*	*(0.099)*	*(0.100)*
Single parent household - dummy variables (Base case: No)				
Yes	-0.056	-0.045	-0.066	-0.076
	(0.122)	*(0.127)*	*(0.128)*	*(0.130)*
Missing	-0.134	-0.084	-0.122	-0.109
	(0.938)	*(0.982)*	*(0.998)*	*(1.007)*
Household Income - Work, benefits and anything else for main parent and second parent				
£s per annum	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)				
Managerial & professional	0.408**	0.416**	0.368**	0.391**
	(0.181)	*(0.187)*	*(0.187)*	*(0.189)*
Intermediate	0.528**	0.529**	0.502**	0.523**
	(0.220)	*(0.224)*	*(0.225)*	*(0.227)*
Small employers & own account workers	0.323	0.311	0.286	0.304
	(0.197)	*(0.200)*	*(0.200)*	*(0.202)*
Lower supervisory & technical occupations	0.137	0.123	0.049	0.062
	(0.202)	*(0.209)*	*(0.212)*	*(0.214)*
Semi-routine	0.210	0.204	0.187	0.203
	(0.208)	*(0.218)*	*(0.218)*	*(0.221)*
Unemployed	0.342	0.344	0.306	0.351
	(0.324)	*(0.339)*	*(0.348)*	*(0.350)*
Household representative not present (%)	-0.731	-0.708	-0.722	-0.693
	(0.707)	*(0.723)*	*(0.706)*	*(0.718)*
Household representative not mother/father (%)	-0.612	-0.689	-0.728	-0.712
	(0.528)	*(0.541)*	*(0.522)*	*(0.509)*
Not applicable (%)	0.104	0.029	-0.004	-0.055
	(0.429)	*(0.443)*	*(0.432)*	*(0.447)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)				
HE undergraduate degree or higher	0.931***	0.914***	0.881***	0.890***
	(0.141)	*(0.149)*	*(0.148)*	*(0.151)*
Lesser HE	0.437***	0.426***	0.408***	0.407***
	(0.132)	*(0.133)*	*(0.134)*	*(0.136)*
A-Level	0.099	0.091	0.092	0.095
	(0.125)	*(0.131)*	*(0.130)*	*(0.132)*
Other	-0.377	-0.400	-0.381	-0.371
	(0.303)	*(0.344)*	*(0.348)*	*(0.353)*
Level 1	-0.219	-0.248	-0.245	-0.258
	(0.219)	*(0.230)*	*(0.229)*	*(0.231)*
None	-0.156	-0.175	-0.118	-0.106
	(0.194)	*(0.198)*	*(0.199)*	*(0.203)*

8.27 (Continued)

	Empirical Estimations			
	(1)	**(2)**	**(3)**	**(4)**
Sample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Index of Multiple Deprivation - 4 Quantiles (Base case: Quantile 4)				
High-medium	0.246*	0.235*	0.092	0.083
	(0.129)	*(0.129)*	*(0.134)*	*(0.136)*
Low-medium	0.584***	0.606***	0.442***	0.436***
	(0.138)	*(0.146)*	*(0.154)*	*(0.157)*
Low	0.796***	0.810***	0.620***	0.624***
	(0.142)	*(0.149)*	*(0.160)*	*(0.162)*
Government Office Region - Dummy Variables (Base case: South East)				
North	0.657***	0.678***	0.865***	0.879***
	(0.149)	*(0.176)*	*(0.177)*	*(0.180)*
Yorkshire and the Humber	0.462***	0.450**	0.494***	0.504***
	(0.176)	*(0.183)*	*(0.180)*	*(0.186)*
Midlands	0.498***	0.523***	0.589***	0.610***
	(0.140)	*(0.154)*	*(0.148)*	*(0.151)*
East of England	0.400**	0.411**	0.516***	0.523***
	(0.156)	*(0.165)*	*(0.161)*	*(0.169)*
London	0.552***	0.551***	0.756***	0.781***
	(0.163)	*(0.181)*	*(0.179)*	*(0.182)*
South West	0.202	0.229	0.330*	0.319*
	(0.172)	*(0.180)*	*(0.186)*	*(0.187)*
Key Skills				
Technical Skill	0.591***	0.605***	0.563***	0.578***
	(0.062)	*(0.062)*	*(0.061)*	*(0.062)*
Gifted and Talented	0.073	0.067	0.040	0.034
	(0.052)	*(0.053)*	*(0.054)*	*(0.055)*
Literacy Skill	0.274***	0.275***	0.255***	0.280***
	(0.053)	*(0.057)*	*(0.057)*	*(0.057)*
Ethnic group - Dummy variables (Base case: White-British)				
Indian subcontinent	1.793***	1.855***	1.913***	1.931***
	(0.180)	*(0.185)*	*(0.187)*	*(0.188)*
Black-Caribbean	0.257	0.251	0.255	0.256
	(0.283)	*(0.299)*	*(0.296)*	*(0.299)*
Black-African	2.003***	2.049***	2.097***	2.113***
	(0.398)	*(0.392)*	*(0.389)*	*(0.401)*
Mixed ethnicity	0.042	0.072	0.064	0.047
	(0.215)	*(0.221)*	*(0.225)*	*(0.229)*
Other	1.168***	1.221***	1.251***	1.290***
	(0.273)	*(0.272)*	*(0.273)*	*(0.278)*
Derived first language - Dummy variables (Base case: English)				
Bilingual	0.561	0.575*	0.557	0.585*
	(0.342)	*(0.350)*	*(0.341)*	*(0.348)*
Other	0.227	0.231	0.210	0.268
	(0.339)	*(0.369)*	*(0.378)*	*(0.362)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS				
Cultural Capital				
Cultural Capital	0.174***	0.178***	0.181***	0.190***
	(0.046)	*(0.048)*	*(0.048)*	*(0.049)*
Habitus				
Academic Self-Perception	0.250***	0.261***	0.304***	0.309***
	(0.051)	*(0.055)*	*(0.056)*	*(0.057)*
Aspirations for Further Study	0.500***	0.516***	0.507***	0.516***
	(0.068)	*(0.065)*	*(0.065)*	*(0.067)*
Social Capital - young person networks				
Outgoing	-0.165***	-0.172***	-0.158***	-0.164***
	(0.045)	*(0.048)*	*(0.048)*	*(0.049)*
Social Participation	-0.028	-0.031	-0.037	-0.040
	(0.043)	*(0.042)*	*(0.042)*	*(0.043)*

8.27 (Continued)

	Empirical Estimations			
	(1)	**(2)**	**(3)**	**(4)**
Sample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital at home				
Parent-Young Person Connectivity	-0.035	-0.034	-0.025	-0.026
	(0.044)	*(0.044)*	*(0.044)*	*(0.045)*
Parental Aspirations for Young Person	0.297***	0.303***	0.301***	0.307***
	(0.054)	*(0.056)*	*(0.056)*	*(0.056)*
Parent-Young Person Concurrence	0.081*	0.080*	0.081*	0.082*
	(0.041)	*(0.042)*	*(0.042)*	*(0.044)*
Social Capital at school				
Parent-School Connectivity	-0.173***	-0.173***	-0.141***	-0.142***
	(0.044)	*(0.047)*	*(0.046)*	*(0.047)*
Parental Assessment of Schooling	0.185***	0.182***	0.158***	0.159***
	(0.045)	*(0.046)*	*(0.047)*	*(0.048)*
Parental Participation in School Activities	0.020	0.021	0.020	0.019
	(0.050)	*(0.050)*	*(0.049)*	*(0.050)*
Parent Involvement in School Governance	-0.018	-0.021	-0.016	-0.011
	(0.045)	*(0.047)*	*(0.046)*	*(0.046)*
Constant				
Constant	-2.194***	-2.222***	-1.994***	-2.018***
	(0.240)	*(0.249)*	*(0.286)*	*(0.292)*
SCHOOL-LEVEL CONTROLS				
Sixth form - Dummy variable (Base case: No)				
Yes	-	-	0.132	0.132
	-	-	*(0.105)*	*(0.107)*
Grammar school - Dummy variable (Base case: No)				
Yes	-	-	0.747***	0.753***
	-	-	*(0.258)*	*(0.260)*
Free School Meal percentage				
%	-	-	-0.015***	-0.015***
	-	-	*(0.005)*	*(0.005)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)				
Satisfactory	-	-	-0.237*	-0.258*
	-	-	*(0.130)*	*(0.132)*
Unsatisfactory	-	-	0.154	0.162
	-	-	*(0.228)*	*(0.233)*
Poor/very poor	-	-	-1.089***	-1.101**
	-	-	*(0.419)*	*(0.447)*
RANDOM EFFECTS				
Var(_cons)	-	0.169**	0.112	0.106
	-	*(0.067)*	*(0.061)*	*(0.064)*
Var(Literacy Skill)	-	-	-	0.147
	-	-	-	*(0.081)*
Cov(Cons, Literacy Skill)	-	-	-	-0.007
	-	-	-	*(0.047)*
REGRESSION STATISTICS				
Pupils (*n.*)	4,289	4,289	4,289	4,289
Schools (*s.*)	-	543	543	543
Iterations	5	-	-	-
Integration Method	-	mvaghermite	mvaghermite	mvaghermite
Iteration Points	-	4	4	5
Log pseudo-likelihood	-1,806.2052	-	-	-
Fixed Effect (It.)	-	-1,806.2052 (4)	-1,786.4897 (4)	-1,786.4897 (4)
Starting Values (It.)	-	-1,806.1059 (0)	-1,822.9906 (0)	-1,846.7248 (0)
Full Model (It.)	-	-1,806.9396 (4)	-1,784.4677 (4)	-1,781.8364 (6)
Wald Chi^2(x)	1020.22 (51)	964.50 (51)	1,059.98 (57)	948.27 (57)
Prob > Chi^2	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.3475	-	-	-

[* $p \leq 0.10$, ** $0.01 < p \leq 0.05$, *** $p \leq 0.01$]

8.27 (Continued)

	Empirical Estimations		
	(1) Weighted Logit	**(2) Weighted Logit - School Random Intercept**	**(3) (2) plus School-level Characteristics**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
INDIVIDUAL-LEVEL CONTROL VARIABLES			
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)			
Dec'89 to Aug'90	0.290**	0.297**	0.302**
	(0.142)	*(0.135)*	*(0.133)*
Single parent household - dummy variables (Base case: No)			
Yes	0.128	0.133	0.104
	(0.178)	*(0.183)*	*(0.182)*
Missing	1.742	1.750	1.697
	(1.267)	*(1.351)*	*(1.502)*
Household income - Work, benefits and anything else for main parent and second parent			
£s per annum	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)			
Managerial & professional	0.545**	0.541**	0.475*
	(0.276)	*(0.275)*	*(0.271)*
Intermediate	0.644**	0.637**	0.637**
	(0.326)	*(0.317)*	*(0.313)*
Small employers & own account workers	0.356	0.346	0.295
	(0.296)	*(0.299)*	*(0.294)*
Lower supervisory & technical occupations	-0.099	-0.113	-0.219
	(0.322)	*(0.334)*	*(0.334)*
Semi-routine	0.321	0.306	0.291
	(0.302)	*(0.314)*	*(0.310)*
Unemployed	-0.197	-0.224	-0.243
	(0.482)	*(0.510)*	*(0.507)*
Household representative not present (%)	-1.084	-1.097	-0.986
	(1.100)	*(1.107)*	*(1.034)*
Household representative not mother/father (%)	-0.858	-0.873	-0.942
	(0.869)	*(0.877)*	*(0.844)*
Not applicable (%)	-0.984	-0.978	-1.047
	(0.628)	*(0.646)*	*(0.641)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)			
HE undergraduate degree or higher	1.081***	1.081***	1.033***
	(0.210)	*(0.212)*	*(0.211)*
Lesser HE	0.555***	0.553***	0.520***
	(0.195)	*(0.200)*	*(0.199)*
A-Level	0.166	0.164	0.171
	(0.191)	*(0.198)*	*(0.195)*
Other	-0.089	-0.067	-0.078
	(0.421)	*(0.479)*	*(0.466)*
Level 1	-0.097	-0.114	-0.134
	(0.322)	*(0.334)*	*(0.334)*
None	0.120	0.125	0.178
	(0.287)	*(0.286)*	*(0.293)*
Index of Multiple Deprivation - 4 Quantiles (Base case: Quantile 4)			
High-medium	0.141	0.138	-0.003
	(0.195)	*(0.194)*	*(0.200)*
Low-medium	0.520**	0.522**	0.337
	(0.203)	*(0.208)*	*(0.217)*
Low	0.687***	0.693***	0.481**
	(0.208)	*(0.204)*	*(0.213)*

8.27 (Continued)

	Empirical Estimations		
	(1)	**(2)**	**(3)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Dummy variables (Base case: South East)			
North	0.577***	0.591**	0.768***
	(0.215)	*(0.236)*	*(0.237)*
Yorkshire and the Humber	0.072	0.080	0.147
	(0.258)	*(0.247)*	*(0.241)*
Midlands	0.177	0.185	0.289
	(0.201)	*(0.210)*	*(0.198)*
East of England	0.308	0.319	0.492**
	(0.225)	*(0.236)*	*(0.226)*
London	0.448*	0.448*	0.714***
	(0.238)	*(0.265)*	*(0.258)*
South West	0.255	0.263	0.376
	(0.266)	*(0.243)*	*(0.247)*
Key Skills			
Technical Skill	0.623***	0.626***	0.571***
	(0.096)	*(0.092)*	*(0.092)*
Gifted and Talented	0.019	0.017	-0.018
	(0.076)	*(0.075)*	*(0.081)*
Literacy Skill	0.281***	0.280***	0.246***
	(0.072)	*(0.074)*	*(0.075)*
Ethnic group - Dummy variables (Base case: White-British)			
Indian subcontinent	1.635***	1.653***	1.687***
	(0.272)	*(0.274)*	*(0.276)*
Black-Caribbean	0.338	0.334	0.286
	(0.402)	*(0.416)*	*(0.410)*
Black-African	2.179***	2.215***	2.255***
	(0.506)	*(0.511)*	*(0.492)*
Mixed ethnicity	-0.422	-0.405	-0.386
	(0.315)	*(0.310)*	*(0.331)*
Other	0.889**	0.910**	0.955**
	(0.417)	*(0.420)*	*(0.410)*
Derived first language - Dummy variables (Base case: English)			
Bilingual	0.572	0.588	0.537
	(0.467)	*(0.477)*	*(0.450)*
Other	0.488	0.497	0.569
	(0.436)	*(0.473)*	*(0.466)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS			
Cultural Capital			
Cultural Capital	0.218***	0.223***	0.229***
	(0.067)	*(0.071)*	*(0.072)*
Habitus			
Academic Self-Perception	0.291***	0.299***	0.348***
	(0.079)	*(0.083)*	*(0.083)*
Aspirations for Further Study	0.500***	0.504***	0.487***
	(0.103)	*(0.100)*	*(0.100)*
Social Capital - young person networks			
Outgoing	-0.162**	-0.162**	-0.148**
	(0.064)	*(0.068)*	*(0.068)*
Social Participation	-0.127*	-0.129**	-0.135**
	(0.067)	*(0.064)*	*(0.063)*
Social Capital at home			
Parent-Young Person Connectivity	-0.055	-0.056	-0.043
	(0.064)	*(0.060)*	*(0.060)*
Parental Aspirations for Young Person	0.276***	0.279***	0.273***
	(0.081)	*(0.084)*	*(0.085)*
Parent-Young Person Concurrence	0.005	0.007	0.005
	(0.057)	*(0.058)*	*(0.058)*

8.27 (Continued)

	Empirical Estimations		
	(1)	**(2)**	**(3)**
Male subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital at school			
Parent-School Connectivity	-0.233***	-0.234***	-0.195***
	(0.064)	*(0.066)*	*(0.067)*
Parental Assessment of Schooling	0.197***	0.193***	0.163**
	(0.065)	*(0.068)*	*(0.068)*
Parental Participation in School Activities	0.059	0.061	0.065
	(0.082)	*(0.088)*	*(0.083)*
Parent Involvement in School Governance	0.011	0.009	0.016
	(0.071)	*(0.074)*	*(0.072)*
Constant			
Constant	-2.415***	-2.431***	-2.174***
	(0.355)	*(0.380)*	*(0.412)*
SCHOOL-LEVEL CONTROL VARIABLES			
Sixth form - Dummy variable (Base case: No)			
Yes	-	-	0.072
	-	-	*(0.139)*
Grammar school - Dummy variable (Base case: No)			
Yes	-	-	0.789***
	-	-	*(0.306)*
Free School Meal percentage			
%	-	-	-0.014**
	-	-	*(0.007)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)			
Satisfactory	-	-	-0.377**
	-	-	*(0.165)*
Unsatisfactory	-	-	0.057
	-	-	*(0.295)*
Poor/very poor	-	-	-1.290**
	-	-	*(0.626)*
RANDOM EFFECTS			
Var(_cons)	-	0.065	0.000
	-	*(0.134)*	*(0.000)*
REGRESSION STATISTICS			
Pupils (*n.*)	2,071	2,071	2,071
Schools (*s.*)	-	473	473
Iterations	5	-	-
Integration Method	-	mvaghermite	mvaghermite
Iteration Points	-	4	3
Log pseudo-likelihood	-834.21407	-	-
Fixed Effect (It.)	-	-834.21407 (4)	-821.97501 (4)
Starting Values (It.)	-	-850.64425 (0)	-842.65706 (0)
Full Model (It.)	-	-834.04568 (5)	-821.97501 (50)
Wald Chi^2(x)	506.17 (50)	488.14 (50)	554.01 (56)
Prob > Ch^{i2}	0.0000	0.0000	0.0000
Pseudo R^2	0.3666	-	-

[* $p \leq 0.10$, ** $0.01 < p \leq 0.05$, *** $p \leq 0.01$]

8.27 (Continued)

	Empirical Estimations		
	(1) Weighted Logit	**(2) Weighted Logit - School Random Intercept**	**(3) (2) plus School-level Characteristics**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
INDIVIDUAL-LEVEL CONTROL VARIABLES			
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)			
Dec'89 to Aug'90	0.353**	0.362***	0.349**
	(0.139)	*(0.140)*	*(0.140)*
Single parent household - Dummy variables (Base case: No)			
Yes	-0.212	-0.210	-0.217
	(0.169)	*(0.172)*	*(0.172)*
Missing	-1.349	-1.313	-1.308
	(1.209)	*(1.211)*	*(1.247)*
Household income - Work, benefits and anything else for main parent and second parent			
£s per annum	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)			
Managerial & professional	0.398	0.406	0.350
	(0.249)	*(0.251)*	*(0.249)*
Intermediate	0.558*	0.568*	0.494
	(0.312)	*(0.302)*	*(0.303)*
Small employers & own account workers	0.432	0.433	0.409
	(0.271)	*(0.272)*	*(0.270)*
Lower supervisory & technical occupations	0.446	0.453*	0.379
	(0.271)	*(0.275)*	*(0.275)*
Semi-routine	0.183	0.183	0.140
	(0.291)	*(0.282)*	*(0.282)*
Unemployed	0.865*	0.872*	0.825*
	(0.446)	*(0.462)*	*(0.472)*
Household representative not present (%)	-0.349	-0.357	-0.370
	(0.908)	*(0.926)*	*(0.909)*
Household representative not mother/father (%)	-0.459	-0.512	-0.552
	(0.652)	*(0.683)*	*(0.650)*
Not applicable (%)	0.816	0.802	0.754
	(0.639)	*(0.667)*	*(0.690)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)			
HE undergraduate degree or higher	0.844***	0.845***	0.813***
	(0.191)	*(0.196)*	*(0.195)*
Lesser HE	0.329*	0.328*	0.320*
	(0.186)	*(0.187)*	*(0.188)*
A-Level	-0.026	-0.027	-0.025
	(0.169)	*(0.178)*	*(0.177)*
Other	-0.702	-0.725	-0.685
	(0.456)	*(0.471)*	*(0.470)*
Level 1	-0.306	-0.305	-0.277
	(0.311)	*(0.316)*	*(0.312)*
None	-0.508*	-0.518**	-0.478*
	(0.264)	*(0.256)*	*(0.259)*
Index of Multiple Deprivation - 4 Quantiles (Base case: Quantile 4)			
High-medium	0.370**	0.370**	0.220
	(0.177)	*(0.173)*	*(0.189)*
Low-medium	0.698***	0.709***	0.554***
	(0.193)	*(0.191)*	*(0.210)*
Low	0.949***	0.958***	0.776***
	(0.197)	*(0.201)*	*(0.224)*

8.27 (Continued)

	Empirical Estimations		
	(1)	**(2)**	**(3)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Dummy variables (Base case: South East)			
North	0.671***	0.683***	0.854***
	(0.209)	*(0.220)*	*(0.223)*
Yorkshire and the Humber	0.757***	0.754***	0.759***
	(0.246)	*(0.243)*	*(0.238)*
Midlands	0.702***	0.715***	0.737***
	(0.199)	*(0.209)*	*(0.204)*
East of England	0.381*	0.382*	0.430**
	(0.220)	*(0.213)*	*(0.208)*
London	0.646***	0.649***	0.814***
	(0.226)	*(0.216)*	*(0.222)*
Key Skills			
Technical Skill	0.620***	0.630***	0.592***
	(0.084)	*(0.087)*	*(0.086)*
Gifted and Talented	0.130*	0.127*	0.096
	(0.075)	*(0.074)*	*(0.074)*
Literacy Skill	0.235***	0.237***	0.230***
	(0.070)	*(0.071)*	*(0.072)*
Ethnic group - Dummy variables (Base case: White-British)			
Indian subcontinent	2.081***	2.112***	2.173***
	(0.261)	*(0.267)*	*(0.268)*
Black-Caribbean	0.322	0.329	0.355
	(0.383)	*(0.390)*	*(0.386)*
Black-African	1.865***	1.870***	1.910***
	(0.598)	*(0.631)*	*(0.622)*
Mixed ethnicity	0.402	0.414	0.383
	(0.296)	*(0.328)*	*(0.330)*
Other	1.562***	1.578***	1.626***
	(0.369)	*(0.373)*	*(0.387)*
Derived first language - Dummy variables (Base case: English)			
Bilingual	0.767	0.767	0.756
	(0.521)	*(0.545)*	*(0.543)*
Other	-0.107	-0.103	-0.165
	(0.477)	*(0.510)*	*(0.512)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS			
Cultural Capital			
Cultural Capital	0.164***	0.164**	0.162**
	(0.063)	*(0.064)*	*(0.064)*
Habitus			
Academic Self-Perception	0.284***	0.286***	0.330***
	(0.069)	*(0.068)*	*(0.068)*
Aspirations for Further Study	0.300***	0.302***	0.299***
	(0.085)	*(0.086)*	*(0.086)*
Social Capital - young person networks			
Outgoing	-0.183***	-0.187***	-0.178***
	(0.062)	*(0.063)*	*(0.063)*
Social Participation	0.084	0.086	0.080
	(0.055)	*(0.053)*	*(0.053)*
Social Capital at home			
Parent-Young Person Connectivity	0.006	0.006	0.014
	(0.061)	*(0.061)*	*(0.061)*
Parental Aspirations for Young Person	0.282***	0.284***	0.286***
	(0.068)	*(0.069)*	*(0.069)*
Parent-Young Person Concurrence	0.127**	0.127**	0.129**
	(0.055)	*(0.056)*	*(0.055)*

8.27 (Continued)

	Empirical Estimations		
	(1)	**(2)**	**(3)**
Female subsample	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital at school			
Parent-School Connectivity	-0.125**	-0.122*	-0.093
	(0.062)	*(0.065)*	*(0.064)*
Parental Assessment of Schooling	0.172***	0.174***	0.150**
	(0.062)	*(0.061)*	*(0.063)*
Parental Participation in School Activities	-0.029	-0.029	-0.035
	(0.058)	*(0.060)*	*(0.061)*
Parent Involvement in School Governance	-0.052	-0.053	-0.048
	(0.066)	*(0.067)*	*(0.066)*
Constant			
Constant	-2.199***	-2.223***	-1.989***
	(0.326)	*(0.315)*	*(0.373)*
SCHOOL-LEVEL CONTROL VARIABLES			
Sixth form - Dummy variable (Base case: No)			
Yes	-	-	0.130
	-	-	*(0.132)*
Grammar school - Dummy variable (Base case: No)			
Yes	-	-	0.690
	-	-	*(0.470)*
Free School Meal Percentage			
%	-	-	-0.015**
	-	-	*(0.007)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)			
Satisfactory	-	-	-0.096
	-	-	*(0.165)*
Unsatisfactory	-	-	0.288
	-	-	*(0.253)*
Poor/very poor	-	-	-0.954***
	-	-	*(0.362)*
RANDOM EFFECTS			
Var(_cons)	-	0.066	0.025
	-	*(0.092)*	*(0.085)*
REGRESSION STATISTICS			
Pupils (*n.*)	2,218	2,218	2,218
Schools (*s.*)	-	487	487
Iterations	5	-	-
Integration Method	-	mvaghermite	mvaghermite
Iteration Points	-	4	3
Log pseudo-likelihood	-955.71952	-	-
Fixed Effect (It.)	-	-955.71952 (3)	-947.49073 (3)
Starting Values (It.)	-	-975.86175 (0)	-970.88465 (0)
Full Model (It.)	-	-955.45286 (5)	-947.45217 (6)
Wald Chi^2(x)	549.86 (50)	486.41 (50)	512.59 (56)
Prob > Chi^2	0.0000	0.0000	0.0000
Pseudo R^2	0.3368	-	-

[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.28 Marginal effects at representative values computed from our preferred logistic regression output which estimates the influences on Higher Education participation for our estimation sample using the Longitudinal Study of Young People in England 2004

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
INDIVIDUAL-LEVEL CONTROL VARIABLES	
Gender - Dummy variable (Base case: Female)	
Male	-0.039 *(0.017)*
Month/year of Birth - Dummy variables (Base case: Sept'89 to Nov'89)	
Dec'89 to Aug'90	0.052 *(0.016)*
Single parent household - Dummy variables (Base case: No)	
Yes - Single parent household	-0.011 *(0.021)*
Missing	-0.020 0.158
Household Income - Work, benefits and anything else for main parent and second parent	
£s per annum	0.000 *(0.000)*
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)	
Managerial & professional	0.068 *(0.040)*
Intermediate	0.096 *(0.050)*
Small employers & own account workers	0.052 *(0.040)*
Lower supervisory & technical occupations	0.008 *(0.036)*
Semi-routine	0.033 *(0.041)*
Unemployed	0.056 *(0.069)*
Household representative not present	-0.099 *(0.076)*
Household representative not mother/father	-0.100 *(0.056)*
Not applicable	-0.001 *(0.073)*
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)	
HE undergraduate degree or higher	0.181 *(0.036)*
Lesser HE	0.077 *(0.028)*
A-Level	0.016 *(0.023)*
Other	-0.058 *(0.048)*
Level 1	-0.039 *(0.034)*
None	-0.019 *0.032*
Government Office Region - Dummy variables (Base case: South East)	
North	0.178 *(0.043)*
York and the Humber	0.094 *(0.039)*
Midlands	0.084 *(0.033)*
East of England	0.122 *(0.037)*
London	0.178 *(0.043)*
South West	0.094 *(0.039)*

8.28 (Continued)

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
Index of Multiple Deprivation - 4 Quantiles (Base case: High)	
High-Medium	0.015
	(0.022)
Low-Medium	0.084
	(0.033)
Low	0.122
	(0.037)
Key Skills	
Technical Skill (1st order)	0.096
	(0.016)
Gifted & Talented	0.007
	(0.009)
Literacy Skill	0.043
	0.011
Ethnic Group - Dummy variables (Base case: White-British)	
Indian subcontinent	0.427
	(0.041)
Black-Caribbean	0.046
	(0.057)
Black-African	0.466
	(0.081)
Mixed ethnicity	0.011
	(0.039)
Other	0.270
	(0.066)
Derived first language - Dummy variables (Base case: English)	
Bilingual	0.108
	(0.075)
Other	0.038
	(0.072)
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS	
Cultural Capital	
Cultural Capital	0.031
	(0.009)
Habitus	
Academic Self-Perception	0.052
	(0.011)
Aspirations for Further Study	0.086
	(0.015)
Social Capital – young person networks	
Outgoing	-0.027
	(0.009)
Social Participation	-0.006
	(0.007)
Social Capital at home	
Parent-Young Person Connectivity	-0.004
	(0.007)
Parental Aspirations for Young Person	0.051
	(0.011)
Parent-Young Person Concurrence	0.014
	(0.007)
Social Capital at school	
Parent-School Connectivity	-0.024
	(0.008)
Parental Assessment of Schooling	0.027
	(0.009)
Parental Participation in School Activities	0.003
	(0.008)
Parent Involvement in School Governance	-0.003
	(0.008)

8.28 (Continued)

	Marginal Effects at Representative values
	dy/dx (*) (s.e.)
SCHOOL-LEVEL CONTROL VARIABLES	
Sixth form	
Yes	0.022 *(0.017)*
Grammar school	
Yes	0.150 *(0.059)*
Free School Meal percentage	
%	-0.002 *(0.001)*
School Ofsted band	
Satisfactory	-0.043 *(0.023)*
Unsatisfactory	0.027 *(0.042)*
Poor/very poor	-0.133 *(0.039)*
n.	4,289

8.29 Complete multi-level logistic regressions estimating the influence of school attended on Higher Education participation for low and high household income, 'Technical Skill' and 'Literacy Skill' subsamples, derived from the Longitudinal Study of Young People in England 2004

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
INDIVIDUAL-LEVEL CONTROL VARIABLES							
Gender - Dummy variable (Base case: Female)							
Male	-0.219**	-0.150	-0.330**	-0.228	-0.268**	-0.259*	-0.202*
	(0.088)	*(0.128)*	*(0.136)*	*(0.149)*	*(0.129)*	*(0.156)*	*(0.117)*
Month/Year of birth - Dummy variables (Base case: Sept'89 to Nov'89)							
Dec'89 to Aug'90	0.340***	0.111	0.606***	0.418**	0.312**	0.393**	0.347***
	(0.099)	*(0.145)*	*(0.147)*	*(0.171)*	*(0.139)*	*(0.175)*	*(0.122)*
Single parent household - Dummy variables (Base case: No)							
Yes	-0.066	-0.139	0.209	-0.041	-0.095	0.054	-0.203
	(0.128)	*(0.150)*	*(0.295)*	*(0.208)*	*(0.168)*	*(0.222)*	*(0.159)*
Missing	-0.122	-1.648*	1.154	0.105	-0.809	-0.561	0.856
	(0.998)	*(0.936)*	*(1.710)*	*(1.052)*	*(1.404)*	*(1.517)*	*(1.179)*
Household income - Work, benefits and anything else for main parent and second parent							
£s per annum	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Family's National Statistics Socioeconomic Classification Class - Dummy variables (Base case: Routine operations)							
Managerial & professional	0.368**	0.519**	0.090	0.215	0.524**	0.232	0.566**
	(0.187)	*(0.242)*	*(0.278)*	*(0.279)*	*(0.266)*	*(0.291)*	*(0.264)*
Intermediate	0.502**	0.533*	0.471	0.296	0.742**	0.271	0.740**
	(0.225)	*(0.277)*	*(0.375)*	*(0.301)*	*(0.329)*	*(0.375)*	*(0.311)*
Small employers & own account workers	0.286	0.416*	0.090	0.054	0.488	-0.001	0.597**
	(0.200)	*(0.251)*	*(0.316)*	*(0.290)*	*(0.297)*	*(0.308)*	*(0.291)*
Lower supervisory & technical occupations	0.049	0.331	-0.370	-0.173	0.256	-0.008	0.084
	(0.212)	*(0.246)*	*(0.352)*	*(0.304)*	*(0.312)*	*(0.310)*	*(0.294)*
Semi-routine	0.187	0.335	-0.149	0.086	0.372	-0.151	0.461
	(0.218)	*(0.256)*	*(0.404)*	*(0.302)*	*(0.334)*	*(0.349)*	*(0.299)*
Unemployed	0.306	0.265	0.072	0.157	0.526	0.391	0.150
	(0.348)	*(0.378)*	*(0.657)*	*(0.449)*	*(0.537*	*(0.475*	*(0.472)*
Household representative not present	-0.722	-0.205	-2.013**	-0.028	-0.999	-1.297	-0.546
	(0.706)	*(0.790)*	*(0.946)*	*(1.227)*	*(0.750)*	*(0.804)*	*(1.016)*
Household representative not mother/father	-0.728	-0.558	-1.224*	-0.208	-0.976	-1.518*	-0.228
	(0.522)	*(0.719)*	*(0.726)*	*(0.497)*	*(0.795)*	*(0.798)*	*(0.687)*
Not applicable	-0.004	0.037	1.270	-0.534	0.867	-1.962**	0.718
	(0.432)	*(0.456)*	*(1.300)*	*(0.622)*	*(0.685)*	*(0.847)*	*(0.603)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Family's highest educational qualification - Dummy variables (Base case: 5 A*-C GCSEs)							
HE undergraduate degree or higher	0.881***	1.031***	0.939***	0.584**	1.146***	1.205***	0.714***
	(0.148)	*(0.234)*	*(0.203)*	*(0.240)*	*(0.199)*	*(0.228)*	*(0.189)*
Lesser HE	0.408***	0.303	0.580***	0.351	0.474**	0.847***	0.103
	(0.134)	*(0.193)*	*(0.198)*	*(0.214)*	*(0.184)*	*(0.223)*	*(0.167)*
A-Level	0.092	-0.138	0.368*	0.037	0.190	0.363*	-0.030
	(0.130)	*(0.177)*	*(0.198)*	*(0.193)*	*(0.176)*	*(0.204)*	*(0.167)*
Other	-0.381	-0.379	-0.312	-0.420	-0.513	0.105	-0.841*
	(0.348)	*(0.389)*	*(0.568)*	*(0.443)*	*(0.474)*	*(0.542)*	*(0.452)*
Level 1	-0.245	-0.051	-0.948*	-0.672**	0.246	-0.443	-0.057
	(0.229)	*(0.259)*	*(0.523)*	*(0.322)*	*(0.351)*	*(0.398)*	*(0.305)*
None	-0.118	-0.009	-0.533	-0.368	0.226	0.074	-0.135
	(0.199)	*(0.222)*	*(0.512)*	*(0.252)*	*(0.351)*	*(0.288)*	*(0.293)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Index of Multiple Deprivation - 4 Quantiles (Base case: Quantile 4)							
High-medium	0.092	0.082	0.026	0.110	0.121	0.122	0.092
	(0.134)	*(0.168)*	*(0.248)*	*(0.196)*	*(0.204)*	*(0.207)*	*(0.185)*
Low-medium	0.442***	0.674***	0.171	0.591**	0.366*	0.561**	0.332*
	(0.154)	*(0.212)*	*(0.245)*	*(0.235)*	*(0.212)*	*(0.264)*	*(0.195)*
Low	0.620***	0.724***	0.440*	0.720***	0.583***	0.572**	0.661***
	(0.160)	*(0.208)*	*(0.266)*	*(0.235)*	*(0.222)*	*(0.246)*	*(0.215)*
Government Office Region - Dummy variables (Base case: South East)							
North	0.865***	1.104***	0.688***	0.828***	0.948***	0.588**	1.125***
	(0.177)	*(0.236)*	*(0.259)*	*(0.262)*	*(0.246)*	*(0.284)*	*(0.223)*
York and the Humber	0.494***	0.357	0.699***	0.560*	0.534**	-0.243	1.054***
	(0.180)	*(0.248)*	*(0.259)*	*(0.303)*	*(0.255)*	*(0.280)*	*(0.249)*
Midlands	0.589***	0.888***	0.315	0.554**	0.692***	0.388*	0.799***
	(0.148)	*(0.207)*	*(0.210)*	*(0.228)*	*(0.214)*	*(0.224)*	*(0.207)*
East of England	0.516***	0.792***	0.301	0.396*	0.697***	0.298	0.760***
	(0.161)	*(0.231)*	*(0.227)*	*(0.236)*	*(0.239)*	*(0.273)*	*(0.206)*
London	0.756***	1.259***	0.306	0.921***	0.703***	0.745***	0.853***
	(0.179)	*(0.237)*	*(0.240)*	*(0.258)*	*(0.251)*	*(0.285)*	*(0.225)*
South West	0.330*	0.567**	0.138	0.394	0.386	0.490	0.261
	(0.186)	*(0.261)*	*(0.258)*	*(0.319)*	*(0.249)*	*(0.325)*	*(0.216)*
Key Skills							
Technical Skill	0.563***	0.535***	0.613***	0.558***	0.407**	0.631***	0.484***
	(0.061)	*(0.077)*	*(0.099)*	*(0.116)*	*(0.161)*	*(0.096)*	*(0.087)*
Gifted and Talented	0.040	0.073	0.022	0.255	0.021	0.232	-0.016
	(0.054)	*(0.079)*	*(0.073)*	*(0.233)*	*(0.060)*	*(0.151)*	*(0.057)*
Literacy Skill	0.255***	0.360***	0.121	0.363***	0.160**	0.307**	0.254**
	(0.057)	*(0.076)*	*(0.089)*	*(0.086)*	*(0.080)*	*(0.131)*	*(0.108)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Government Office Region - Dummy variables (Base case: South East)							
North	0.865***	1.104***	0.688***	0.828***	0.948***	0.588**	1.125***
	(0.177)	*(0.236)*	*(0.259)*	*(0.262)*	*(0.246)*	*(0.284)*	*(0.223)*
York and the Humber	0.494***	0.357	0.699***	0.560*	0.534**	-0.243	1.054***
	(0.180)	*(0.248)*	*(0.259)*	*(0.303)*	*(0.255)*	*(0.280)*	*(0.249)*
Midlands	0.589***	0.888***	0.315	0.554**	0.692***	0.388*	0.799***
	(0.148)	*(0.207)*	*(0.210)*	*(0.228)*	*(0.214)*	*(0.224)*	*(0.207)*
East of England	0.516***	0.792***	0.301	0.396*	0.697***	0.298	0.760***
	(0.161)	*(0.231)*	*(0.227)*	*(0.236)*	*(0.239)*	*(0.273)*	*(0.206)*
London	0.756***	1.259***	0.306	0.921***	0.703***	0.745***	0.853***
	(0.179)	*(0.237)*	*(0.240)*	*(0.258)*	*(0.251)*	*(0.285)*	*(0.225)*
South West	0.330*	0.567**	0.138	0.394	0.386	0.490	0.261
	(0.186)	*(0.261)*	*(0.258)*	*(0.319)*	*(0.249)*	*(0.325)*	*(0.216)*
Key Skills							
Technical Skill	0.563***	0.535***	0.613***	0.558***	0.407**	0.631***	0.484***
	(0.061)	*(0.077)*	*(0.099)*	*(0.116)*	*(0.161)*	*(0.096)*	*(0.087)*
Gifted and Talented	0.040	0.073	0.022	0.255	0.021	0.232	-0.016
	(0.054)	*(0.079)*	*(0.073)*	*(0.233)*	*(0.060)*	*(0.151)*	*(0.057)*
Literacy Skill	0.255***	0.360***	0.121	0.363***	0.160**	0.307**	0.254**
	(0.057)	*(0.076)*	*(0.089)*	*(0.086)*	*(0.080)*	*(0.131)*	*(0.108)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Ethnic group - Dummy variables (Base case: White-British)							
Indian subcontinent	1.913***	1.902***	2.073***	1.930***	2.088***	2.012***	2.024***
	(0.187)	*(0.223)*	*(0.374)*	*(0.246)*	*(0.364)*	*(0.313)*	*(0.257)*
Black-Caribbean	0.255	0.504	-0.053	0.151	0.380	0.389	0.198
	(0.296)	*(0.343)*	*(0.454)*	*(0.384)*	*(0.472)*	*(0.467)*	*(0.369)*
Black-African	2.097***	2.230***	1.504*	2.467***	0.924*	3.276***	1.274**
	(0.389)	*(0.462)*	*(0.806)*	*(0.443)*	*(0.546)*	*(0.562)*	*(0.501)*
Mixed ethnicity	0.064	0.374	-0.250	0.092	0.048	-0.186	0.168
	(0.225)	*(0.296)*	*(0.335)*	*(0.331)*	*(0.372)*	*(0.339)*	*(0.331)*
Other	1.251***	1.533***	0.789*	1.262***	1.145***	0.994**	1.782***
	(0.273)	*(0.331)*	*(0.420)*	*(0.359)*	*(0.374)*	*(0.394)*	*(0.376)*
Derived first language - Dummy variables (Base case: English)							
Bilingual	0.557	0.118	2.170***	0.366	1.566**	0.721*	-0.061
	(0.341)	*(0.468)*	*(0.832)*	*(0.415)*	*(0.660)*	*(0.434)*	*(0.460)*
Other	0.210	0.129	0.485	0.198	0.356	0.092	0.495
	(0.378)	*(0.439)*	*(0.717)*	*(0.431)*	*(0.579)*	*(0.536)*	*(0.585)*
Constant							
Constant	-1.994***	-2.240***	-1.730***	-2.047***	-2.031***	-1.971***	-2.093***
	(0.286)	*(0.380)*	*(0.482)*	*(0.432)*	*(0.427)*	*(0.453)*	*(0.423)*
CULTURAL AND SOCIAL CAPITAL PRINCIPAL COMPONENTS							
Cultural Capital							
Cultural Capital	0.181***	0.139**	0.224***	0.150*	0.207***	0.147*	0.240***
	(0.048)	*(0.064)*	*(0.069)*	*(0.080)*	*(0.065)*	*(0.080)*	*(0.062)*
Habitus							
Academic Self-Perception	0.304***	0.362***	0.284***	0.143*	0.444***	0.349***	0.306***
	(0.056)	*(0.074)*	*(0.082)*	*(0.081)*	*(0.074)*	*(0.087)*	*(0.074)*
Aspirations for Further Study	0.507***	0.478***	0.575***	0.478***	0.558***	0.508***	0.517***
	(0.065)	*(0.091)*	*(0.098)*	*(0.087)*	*(0.105)*	*(0.098)*	*(0.087)*

8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**'Technical Skill' subsamples**		**'Literacy Skill' subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
Social Capital - young person networks							
Outgoing	-0.158***	-0.138**	-0.169**	-0.156**	-0.182***	-0.144**	-0.200***
	(0.048)	*(0.066)*	*(0.070)*	*(0.067)*	*(0.067)*	*(0.072)*	*(0.065)*
Social Participation	-0.037	-0.068	-0.006	0.011	-0.085	-0.052	-0.024
	(0.042)	*(0.059)*	*(0.070)*	*(0.075)*	*(0.054)*	*(0.070)*	*(0.061)*
Social Capital at home							
Parent-Young Person Connectivity	-0.025	0.049	-0.109*	0.025	-0.045	-0.109	0.041
	(0.044)	*(0.063)*	*(0.062)*	*(0.073)*	*(0.059)*	*(0.074)*	*(0.059)*
Parental Aspirations for Young Person	0.301***	0.205***	0.423***	0.310***	0.304***	0.233***	0.367***
	(0.056)	*(0.071)*	*(0.082)*	*(0.076)*	*(0.085)*	*(0.084)*	*(0.077)*
Parent-Young Person Concurrence	0.081*	0.111**	0.046	0.089	0.079	0.179***	0.031
	(0.042)	*(0.056)*	*(0.072)*	*(0.070)*	*(0.055)*	*(0.059)*	*(0.056)*
Social Capital at school							
Parent-School Connectivity	-0.141***	-0.170***	-0.117	-0.068	-0.197***	-0.151**	-0.167***
	(0.046)	*(0.062)*	*(0.075)*	*(0.067)*	*(0.065)*	*(0.070)*	*(0.063)*
Parental Assessment of Schooling	0.158***	0.126**	0.197***	0.219***	0.112*	0.238***	0.086
	(0.047)	*(0.061)*	*(0.074)*	*(0.067)*	*(0.066)*	*(0.071)*	*(0.065)*
Parental Participation in School Activities	0.020	0.082	-0.034	0.111*	-0.058	0.025	-0.004
	(0.049)	*(0.073)*	*(0.064)*	*(0.057)*	*(0.060)*	*(0.077)*	*(0.063)*
Parent Involvement in School Governance	-0.016	-0.084	0.014	0.043	-0.046	-0.002	-0.035
	(0.046)	*(0.081)*	*(0.055)*	*(0.089)*	*(0.053)*	*(0.072)*	*(0.066)*

8.29 (Continued)

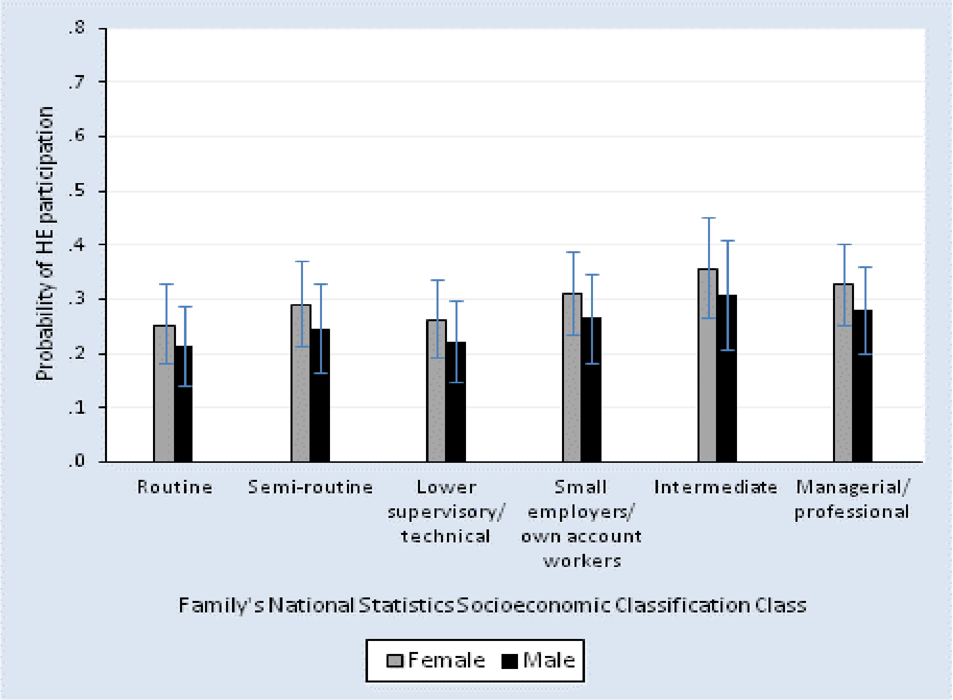
	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**‘Technical Skill’ subsamples**		**‘Literacy Skill’ subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
SCHOOL-LEVEL CONTROLS VARIABLES							
Sixth form - Dummy variable (Base case: No)							
Yes	0.132	0.133	0.083	0.174	0.123	0.330**	-0.030
	(0.105)	*(0.133)*	*(0.154)*	*(0.153)*	*(0.146)*	*(0.164)*	*(0.136)*
Grammar school - Dummy variable (Base case: No)							
Yes	0.747***	1.398***	0.564**	2.445*	0.810***	0.063	1.052***
	(0.258)	*(0.443)*	*(0.284)*	*(1.355)*	*(0.269)*	*(0.496)*	*(0.269)*
Free School Meal percentage							
%	-0.015***	-0.015**	-0.014	-0.007	-0.022***	-0.015**	-0.017**
	(0.005)	*(0.006)*	*(0.010)*	*(0.007)*	*(0.007)*	*(0.008)*	*(0.007)*
Ofsted band - Dummy variables (Base case: Excellent/very good/good)							
Satisfactory	-0.237*	-0.371**	-0.060	-0.247	-0.234	-0.326	-0.236
	(0.130)	*(0.162)*	*(0.191)*	*(0.202)*	*(0.181)*	*(0.227)*	*(0.159)*
Unsatisfactory	0.154	0.004	0.395	0.253	0.037	0.156	0.090
	(0.228)	*(0.205)*	*(0.375)*	*(0.248)*	*(0.388)*	*(0.274)*	*(0.300)*
Poor/very poor	-1.089***	-1.103**	-1.218*	-1.293**	-0.815	-2.271***	-0.176
	(0.419)	*(0.455)*	*(0.651)*	*(0.559)*	*(0.595)*	*(0.501)*	*(0.599)*
RANDOM EFFECTS							
Var(_cons)	0.112	0.000	0.188	0.080	0.256	0.247	0.091
	(0.061)	*(0.000)*	*(0.126)*	*(0.156)*	*(0.122)*	*(0.150)*	*(0.083)*

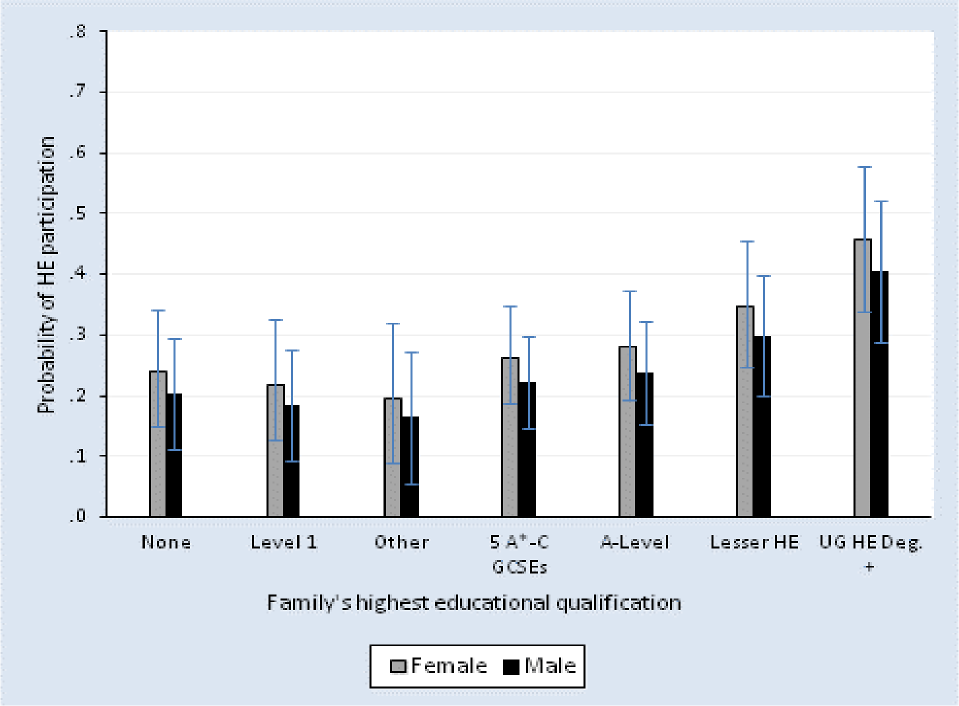
8.29 (Continued)

	Empirical Estimations						
	(3)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Sample	**Household Income subsamples**		**‘Technical Skill’ subsamples**		**‘Literacy Skill’ subsamples**	
		Low	**High**	**Low**	**High**	**Low**	**High**
	(Multi-level)	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*	*(Multi-level)*
	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)	Coef. (β) (s.e.)
REGRESSION STATISTICS							
Pupils (*n.*)	4,289	2,324	1,965	1,995	2,294	1,954	2,335
Schools (*s.*)	543	529	466	511	499	513	506
Integration Method	mvaghermite	mvaghermite	Mvaghermite	mvaghermite	mvaghermite	mvaghermite	Mvaghermite
Iteration Points	4	3	4	5	5	5	4
Fixed Effect (It.)	-1,786.490 (4)	-893.511 (4)	-854.585 (4)	-755.123 (4)	-1,005.415 (4)	-755.168 (4)	-992.459 (3)
Starting Values (It.)	-1,822.881 (0)	-915.560 (0)	-866.654 (0)	-769.269 (0)	-1,015.426 (0)	-764.310 (0)	-1011.821 (0)
Full Model (It.)	-1,784.468 (4)	-893.511 (39)	-853.098 (4)	-754.941 (4)	-1,002.369 (5)	-753.414 (5)	-991.934 (5)
Wald Chi^2(x)	1,059.98	624.97 (57)	472.17 (57)	427.07 (57)	454.86 (57)	419.16 (57)	463.43 (57)
Prob > Chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

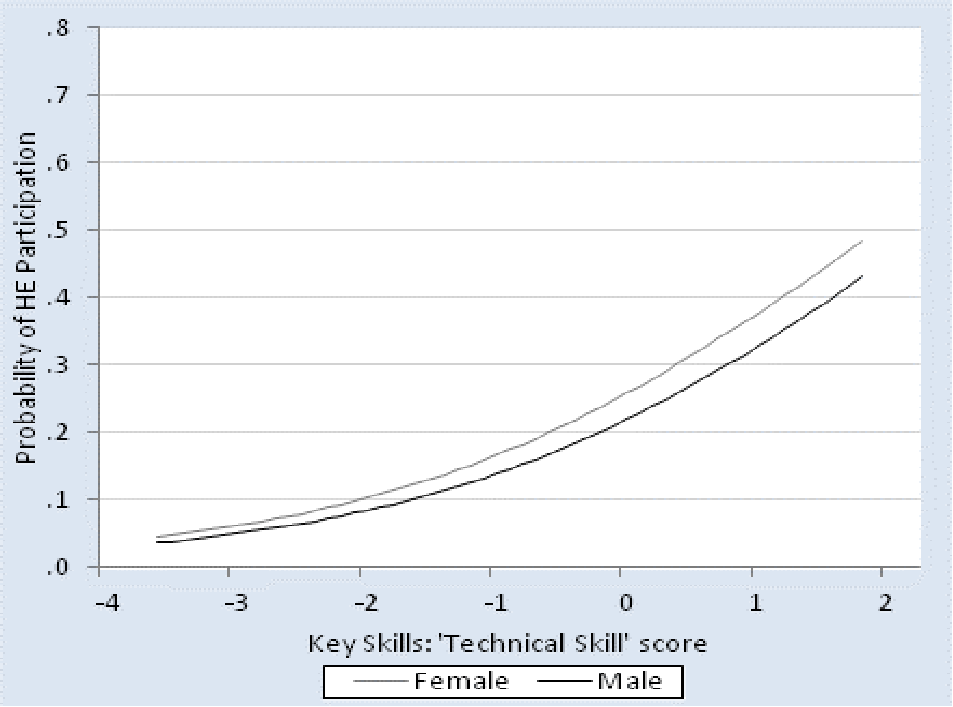
[* p ≤ 0.10, ** 0.01 < p ≤ 0.05, *** p ≤ 0.01]

8.30 Additional predicted probability of participation in Higher Education diagrams

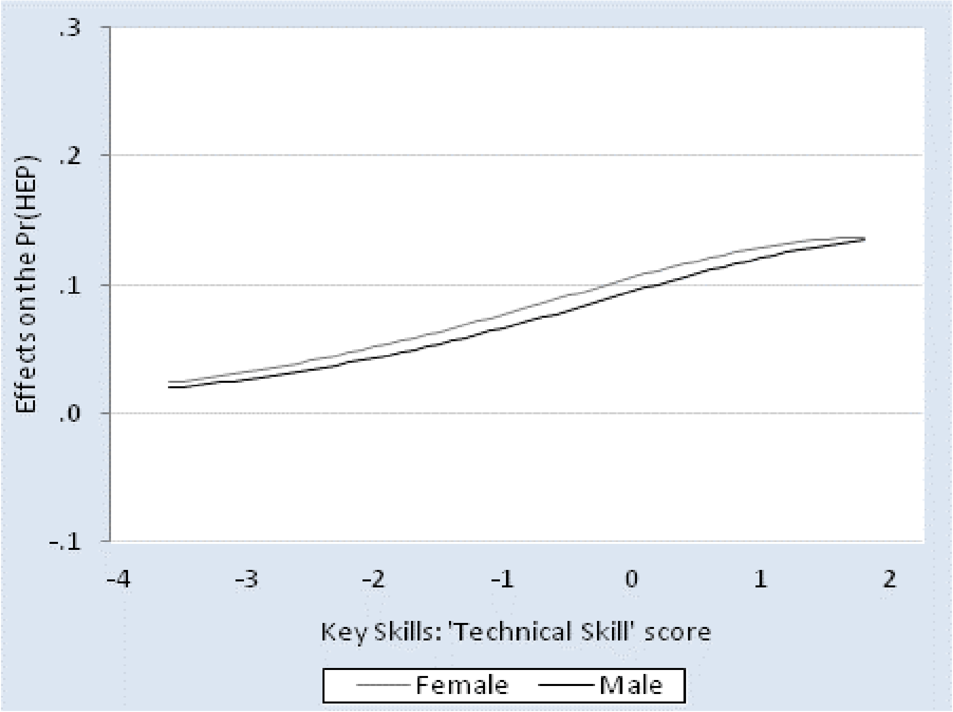




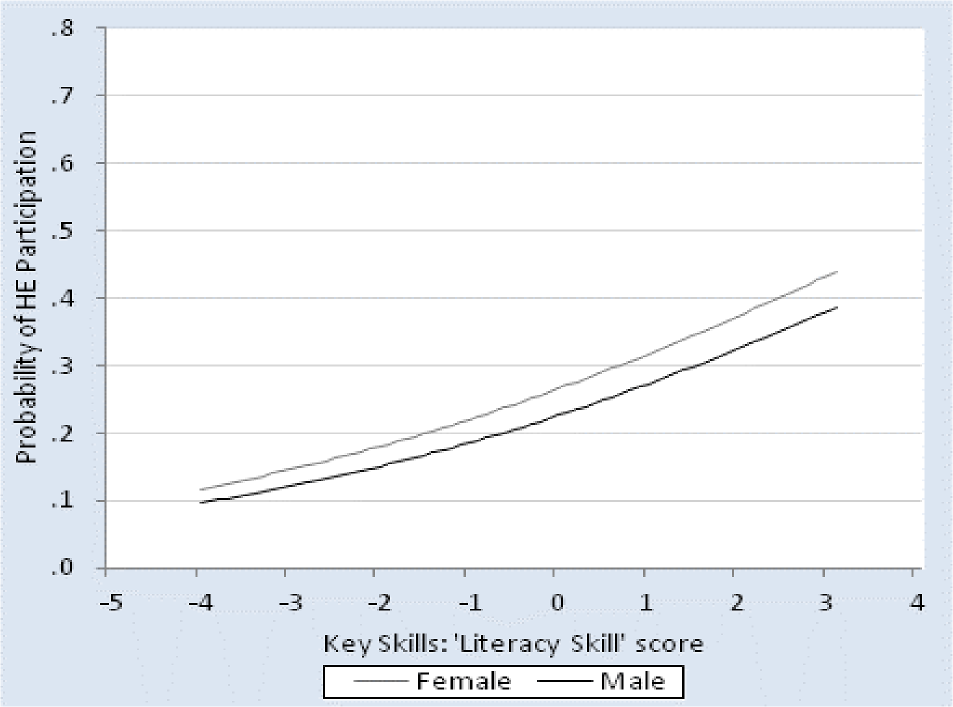
8.30 (Continued)



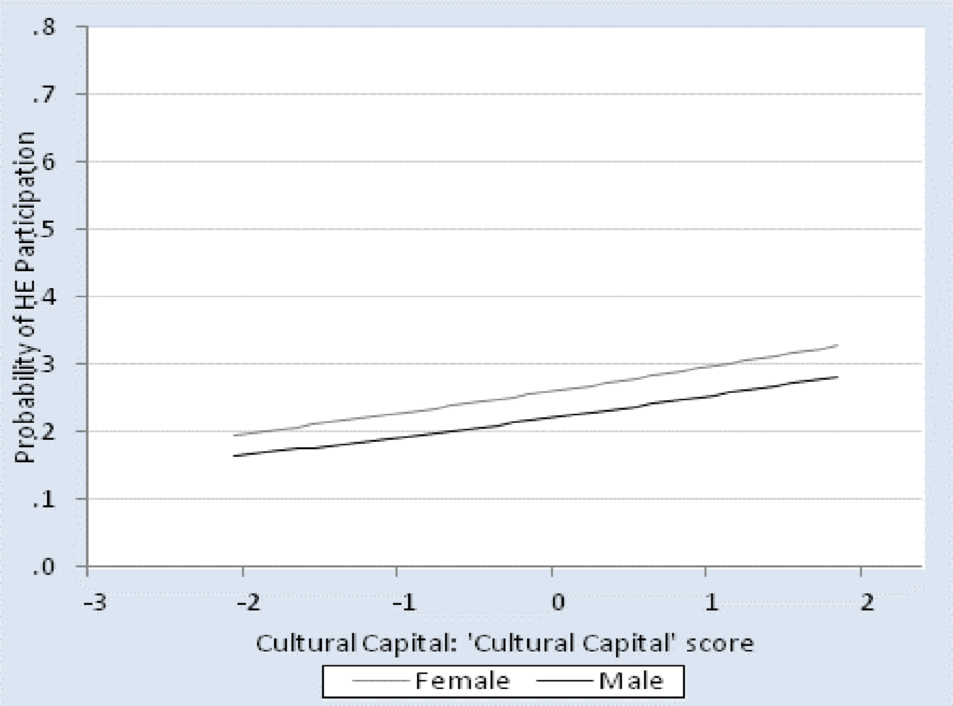
[Approx. 'Technical Skill' percentiles: (10th) -1.55 (25th) -0.74 (50th) 0.03 (75th) 0.71 (90th) 1.13]



8.30 (Continued)

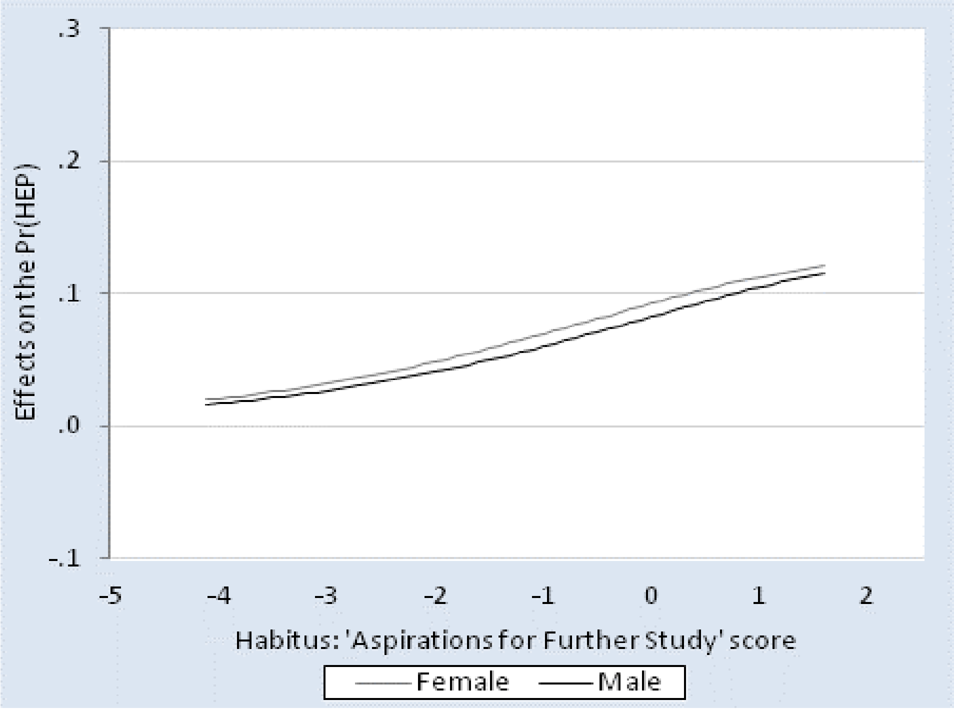


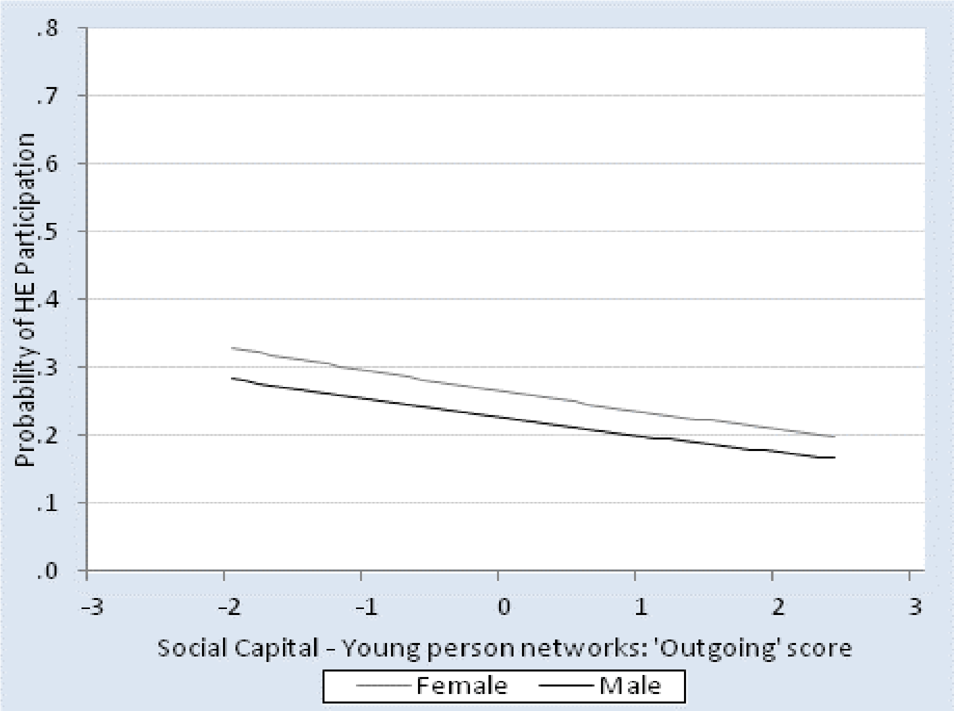
Approx. 'Literacy' percentiles: (10th) -1.52 (25th) -0.77 (50th) -0.08 (75th) 0.57 (90th) 1.15]



Approx. 'Cultural Capital' percentiles: (10th) -1.47 (25th) -0.74 (50th) Restricted (75th) 0.73 (90th) 1.45]

8.30 (Continued)





Approx. 'Outgoing' percentiles: (10th) -1.31 (25th) -0.62 (50th) 0.14 (75th) 0.90 (90th) 1.58]

8.30 (Continued)