Onwards or Upwards?

Pathways and persistent inequality in the United Kingdom's comprehensive education system.

Patricia McMullin

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Florence, May, 2016

European University Institute

Department of Political and Social Sciences

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I Patricia Marie McMullin (Née O'Reilly) certify that I am the author of the work Onwards or upwards? Pathways and persistent inequality in the United Kingdom's comprehensive education system. I have presented for examination for the Ph.D. at the European University Institute. I also certify that this is solely my own original work, other than where I have clearly indicated, in this declaration and in the thesis, that it is the work of others.

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To Janto and to my parents

ABSTRACT

The UK's comparatively open and flexible education system provides more options for individuals from less advantaged backgrounds to participate, and has a high uptake of tertiary and adult education. However, individuals from lower socio-economic backgrounds remain proportionately under-represented at the highest levels of post-compulsory education.

The complex relationship between expansion, the diversification of educational systems and freedom of choice in modern liberal societies means that the background from which students are drawn remains highly relevant to their progression. Multiple options and qualitative differences between courses and institutions puts the onus on students and parents to make correct career decisions - if students from lower socio-economic backgrounds are found more often in less prestigious educational pathways, then prestigious higher level institutions are likely to remain exclusive.

The major contribution of my dissertation is the development of an overview of UK educational and labour market pathway formation and its influence on individuals' educational trajectories and social positions. More specifically, I expand on Kerckhoff's (1993) work on "Diverging Pathways: Social Structure and Career Deflections", taking into account changes since the introduction of the comprehensive system, gender differences and adult education. I further the distinction between a pathway and a trajectory in life-course research and elaborate on the debated question of "persistent inequality", taking the theoretical perspective of "effectively maintained inequality" (Lucas 2001) into account. Finally, I consider the role of interactions between different types of inequality (cumulating dimensions).

This thesis finds that students from more educated backgrounds are more likely to choose academic subjects and pathways early, which influences their performance and further progression opportunities. It also finds that men and women differ regarding educational pathways, that vertical gender inequalities and horizontal gender differences at first labour market entry have remained relatively stable over the latter half of the 20th century. And finally, that adult education and learning is subject to a "Matthew effect" (Merton 1968).

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INTRODUCTION

The United Kingdom's institutional setting promotes relatively high levels of participation in post-compulsory education and adult learning. A more open and flexible education system provides more options for individuals from less advantaged backgrounds to participate, however there is evidence to suggest that individuals from lower socio-economic backgrounds remain under-represented at the highest levels of post-compulsory education and consequently remain disadvantaged in the labour market (Boliver 2010; Triventi 2013). The purpose of this thesis is twofold – to expand on Alan Kerckhoff's 1993 seminal study on "Diverging Pathways: Social Structure and Career Deflections" by elaborating on the multiple dimensions of educational inequality in the United Kingdom, and to further explore how educational (dis)advantages cumulate over the life-course.

This thesis defines the dimensions of educational inequalities in terms of "horizontal differences" (for example, differences in type of education and occupation) both formal and non-formal, "vertical inequalities" (prestige and wages) and changes over time (i.e. across an individual's life span and over cohorts). In particular, this thesis expands on Kerckhoff's work by focusing on the contribution of more recent research on horizontal differences in the education system, such as differences in subject choice, and horizontal gender differences in the labour market (e.g. gender segregation into different types of occupations). The role of adult education in cumulating educational (dis)advantages or correcting for previous educational mistakes is also examined.

I make a distinction between pathways and trajectories, drawing on the work of Pallas (2003). A pathway refers to institutional opportunity structures/channels that are (1) more or less flexible, (2) shaped by institutional change in the form of greater differentiation in educational systems, and (3) do not set goals nor temporal norms. By contrast, trajectories are construed as transition sequences that are "path dependent", i.e. sequentially contingent on prior conditions (DiPrete & Eirich 2006), and responsive to individual choices and influences such as family.

I elaborate on the debated question of "persistent inequality", taking the theoretical perspective of "effectively maintained inequality" (Lucas 2001) into account. I argue that flexible pathways in comprehensive education systems and liberal labour markets, while theoretically providing more access routes to higher levels of education for children from lower socio-economic backgrounds, also ultimately serve to maintain the status quo in the transfer of social status from one generation to the next by providing more opportunities for

individuals with greater financial, familial and educational resources to better position themselves. The process of differentiation meant that expansion of the educational system did not necessarily coincide with equalisation. Also if there are qualitative differences between institutions such as schools and universities - if students from lower socio-economic backgrounds are found more often in less prestigious educational pathways - then higher education may remain an exclusive or elitist environment.

This thesis is part of a European Research Grant (ERC) funded project "Education as a Lifelong Process - Comparing Educational Trajectories in Modern Societies" (*edu*LIFE), which aims to study how individuals' educational careers and skill trajectories evolve regarding family background, educational institutions, workplaces, and private life events over the following four phases of the life course in reverse chronological order.

1. Education in adulthood
2. Transition to work
3. Transition to post-secondary education
4. Early childhood education

The UK/British and English contributions are presented in this thesis from phase 1-3 and differs from Kerckhoff's work in that it explicitly analyses the role of school type after the introduction of the comprehensive system.

What are the multiple dimensions of educational inequality?

The dimensions of educational inequality are understood to be threefold in this thesis: (1) vertical (2) horizontal and (3) timing. Sorensen (1970) outlines two different dimensions of organisational differentiation, vertical and horizontal, giving birth to a research tradition that recognises "horizontal stratification" as having direct consequences for different segments of the population. Horizontal differentiation within educational systems and labour markets create a more diverse opportunity structure leading to more within cohort differentiation. Later Lucas (2001) attempts to marry the transition and tracking literature with his concept of "effectively maintained inequality", demonstrating that more educational expansion does not necessarily lead to more equity in a system.

Distinguishing between horizontal differences and vertical stratification is particularly relevant when exploring gendered pathways through institutional settings, as recent research

has shown that men and women differ not only by income and prestige but also by field of study and occupational activity (Smyth & Steinmetz 2008; Blossfeld et al. 2015). Differentiating these dimensions also allows for a more complex understanding of how social position is passed from one generation to the next. Horizontal dimensions shift with educational expansion and industrial change, transforming opportunity structures/pathways and allowing multiple opportunities for the exploration of the linkage between social context and individual action.

In life-course literature, time as a dimension of educational inequality has been taken into account through analysis focused on duration (how long it took before an event or transition took place) as well as whether or not there is a "Matthew" or "equalising effect" in adult education (Merton 1968; DiPrete & Eirich 2006; Blossfeld et al. 2014), and more recently, using growth curve analysis to examine how advantages and disadvantages cumulative over an entire life-course. This is discussed in the following section as it is vital to the development of the theoretical understanding of educational inequality that forms the backbone of this thesis.

The link between socio-economic position and the ability to change tracks or educational pathways over time have been introduced into studies on status attainment. In this direction there has been work done on the role of adult education in cumulating educational (dis)advantages (Blossfeld et al. 2014) and on the ability of parents to compensate for children's prior achievement or track placement (Bernardi & Boado 2014). Stratified (tracked systems) separate students at a relatively early age, sorting them into different institutional channels which determine their access to later educational opportunities. In highly stratified systems, educational credentials reflect these tiered institutional arrangements. On the other hand, highly standardised systems produce a reliable set of outcomes. "The credentials they award have a consistent meaning" (Kerckhoff et al. 2001, p. 498). Comprehensive systems theoretically do not divide students between schools, however ability sorting, setting and streaming[1] have been prominent features of these systems since their establishment.

Pathways, trajectories and cumulative (dis)advantages in flexible education systems.

In the study of educational stratification, it has become necessary to take into account cumulative processes that occur throughout the formative years as well as during workers' careers (Kerckhoff et al. 1996). Educational transitions research is an integral part of the study

1. Streaming refers to sorting students into the same tracks across subjects (e.g. vocational, track, academic or honours)

of education and social mobility. Most often, it investigates major transitions from one educational level to the next (Shavit & Blossfeld 1993). Less is known about how "pathways" are created over multiple transitions, through a system or series of systems (see Kerckhoff 1993). Often the terms "pathway" and "trajectory" are used synonymously in the literature to describe a sequence of transitions travelled by individuals or a group of individuals. However a distinction can be made between the two terms, as by definition, a "trajectory" can be understood to have a destination, whereas a pathway is more vague (and more flexible than tracking[2]). As outlined in chapter one, pathways can be more or less flexible, and may incorporate "non-traditional trajectories" and there may also be formal and informal pathways through a system that coexist, complementing or clashing with one another.

Merton (1968) states that in a "merit-based" system where resources are limited, students who achieve early have the opportunity to amass cumulative advantage, while their classmates who "fail" to achieve early may find themselves facing cumulative disadvantage with limited opportunities to correct their trajectory. While more open pathways and non-traditional trajectories would seem to favour students who do not achieve early, or students from less socio-economically advantaged or educated backgrounds, the more pathways that become available, the greater the need to navigate them correctly.

Without support from educated and informed parents or high quality career advice, the theoretical pathways or opportunity structures that exist in a more flexible system may be effectively closed to students who are unaware of them or of their ability to shape more formal ones. As access to education among lower socio-economic classes continues, the advantaged will leverage horizontal differences to maintain advantage, and the scope for achieving this is greater in a more flexible system. The early theoretical statement of cumulative advantage process by Robert K. Merton (popularised as the "Matthew Effect") in 1968 links the micro level of individual trajectories to the macro context of pathways; cumulative advantage processes occur within and are shaped by a given "opportunity structure" (Pfeffer & Goldrick-Rab 2011). In this thesis cumulative inequality works in two ways: firstly as the accumulation and interaction of advantages and disadvantages (both ascribed and acquired) that influences an individual's opportunities and second, the accumulation (or lack thereof) of advantages and disadvantages over time. Ascribed

2. Track' refers to the sorting of individual students into different types of education based on performance, and is more often used to refer to the German education system, where students are divided from an early age into Hauptschule, Realschule and Gymnasium which provide very different curricula and opportunities to enter higher levels of education. In the UK students were traditionally sorted into grammar, secondary modern and technical schools by means of the 11-plus exam, but this changed in the 1960s with the move to more comprehensive education (Kilpi-Jakonen et al. 2014).

characteristics such as gender and socio-economic status can interact with one another to suppress or boost advantages as-well-as drive acquired characteristics such as performance.

Linked to this is the complementary concept of compensatory advantage as outlined by Bernardi and Boado (2014). Compensatory advantage gives an active role to parents and students in maintaining advantage despite performance. If children from higher socio-economic backgrounds with mid-levels of performance can progress to higher levels of education and their counter-parts from disadvantaged backgrounds drop out, then there is evidence that an advantaged social background has a compensatory effect. Over time and transitions, different groups of individuals diverge from one another through path dependency and compensatory advantages, the children of the advantaged move up to higher levels of education and those who accrue high levels of education are more likely to accrue more (a Matthew Effect).

Gender differences in the labour market and adult education

As outlined above, this thesis builds on Kerckhoff's work on British transitions by focusing more on gender differences as well as adult education. The processes by which people are allocated to different roles, resources, and relationships and socialised to expect and choose different life paths depend on their age and gender (as well as their race and class). Gendered scripts also guide relationships with organisations and institutions. With educational expansion and increased differentiation, multiple diverging pathways through education mean that men and women have multiple options and can part ways as they make different choices – in the UK some choices are made as early as age 14, with regard to subjects studied at second level (see chapter 4). Younger individuals are more likely to choose educational pathways that match their gender identity (Imdorf et al. 2014) and therefore horizontal gender differences may partially reflect this early sorting.

This thesis focuses on the role of changing institutional structures and their impact on gender differences in women's educational attainment levels in the latter half of the 20th century. According to Charles and Grusky (2004) the gendered segregation of labour markets has, in addition to vertical differences, a horizontal dimension. This means that as well as inequalities with regard to pay and prestige, women and men also typically enter occupations dominated by their own gender. These differences are often attributed to family formation. The underlying assumption is that, regardless of higher levels of investment in their education, women are forced to prioritise their families at some point during their career. However female and male segregation at labour market entry is less vulnerable to

assumptions about family formation. With highly educated men and women increasingly delaying marriage and family, the period just after labour market entry is vital for understanding how men and women diverge from each another in terms of the types of jobs that they take and in the rewards they obtain for similar work.

The final chapter of this thesis examines adult learning. Adult learning is defined in terms of educational upgrading, side-stepping, formal adult education, non-formal adult learning and certified non-formal adult learning[3]. Adult learning may act as an avenue to correct previous educational mistakes, however the conclusion of many previous studies on adult learning has been that educational opportunities follow a pattern of cumulative advantage, whereby the highly educated are more likely to receive more adult learning. (e.g. Elman & O'Rand 2004). This chapter also recognises that the reasons for participating in adult education may be very different for men and women (the "Gendered participation hypothesis"). For example, due to career interruptions women may be more likely to participate more in non-formal training and formal education in order to signal commitment or to preserve their labour market skills. In flexible labour markets where hiring and firing is easier, women may rely more on upskilling and sidestepping as a tactic to remain competitive with men. The type of adult education accessed by men and women is an important aspect of cumulating advantages and disadvantages. Overall, the impression is that earlier (dis)advantages in the education system accumulate over the life course.

Thesis organisation

I aim to examine how participation opportunities are distributed within the population and over individuals' educational careers in the UK, and how these opportunities are related to one another. I wish to do so by addressing differences between groups, firstly in terms of different pathways through compulsory education; secondly, by examining the influence of previous level of education and socio-economic background on gender differences at labour market entry; and finally, through the exploration of opportunities that individuals have to correct previous educational mistakes by participating in further education and training after labour market entry. This thesis takes a life-course perspective as this approach recognises the dynamic nature of educational decisions as well as the role of institutional circumstances in shaping individuals' life paths. Life-course scholars see cumulative advantage working in patterns of "diverging trajectories" (DiPrete & Eirich 2006). Previous experiences can influence subsequent decisions and experiences, and various pathways through education can

3. See Chapter 5 for more details

have different consequences in terms of educational development. Therefore, this perspective is a powerful tool in explaining how individuals from different socio-economic backgrounds are sent in diverging directions through the education system.

The core questions of this thesis are as follows:

1. What are educational pathways in comprehensive systems and how do they change?
2. Do diverging pathways help explain vertical and horizontal gender differences at labour market entry?
3. What is the role of adult education in changing pathways?

The introductory section of this thesis is immediately followed by a brief section on the research design of this thesis that outlines: (1) The role of the eduLIFE project in determining the empirical strategy of this thesis, including the operationalisation of key concepts in the eduLIFE project (2) the main datasets and how the sample was defined and (3) the main analytical tools used in the empirical chapters.

Chapter 1 of this thesis discusses educational pathways and persistent inequality in educational attainment, and aims to elaborate on Kerckhoff's work on diverging pathways by focusing on changes in the literature on educational attainment and on the three core research questions of this thesis as outlined above. Kerckhoff explored divergences and defections, and his work was crucial for understanding how structural locations influence cumulating advantages and disadvantages. Since his study, more work has been done to treat the heterogeneity of varying structural positions in increasingly loose educational systems.

Chapter 2 explores the institutional setting of the United Kingdom, highlighting several major reforms that continue to impact on the opportunity structure of the UK's educational system. During the 1970s the comprehensive system replaced the tripartite system, which theoretically ended formal tracking in terms of ability. The 1988 Education Reform Act introduced a standardised curriculum, gave parents in England the (theoretical) right to choose their child's school and obliged all publicly maintained (funded) schools to produce performance indicators. The former move theoretically reduced SES inequalities by removing barriers to "better" schools, while the latter aimed to raise standards by creating greater competition between schools. The overall aim of the chapter is to handle some of the complexities of the UK's educational system and to provide the first empirical support for the theoretical arguments of the thesis. It pays particular attention to the comprehensive system as

it stands and presents descriptive statistics that explore the diverging trajectories of the children of the lower educated and gender differences.

The first empirical chapter of this thesis (Chapter 3) focuses on how differentiation in secondary education produces and re-produces social inequalities in educational opportunities and educational attainment. Differentiation in education is understood to include both vertical and horizontal dimensions as well as both formal and "hidden differentiation". While the former typically relates to tracks (as in the German education system), the latter refers to variation between schools in terms of quality. In addition, it looks at the role of gender – not purely whether gender differences exist, but how do these gender differences accumulate and interact with other dimensions of inequality? In this chapter, the following research questions are addressed in more detail.

- Is there a link between student social background and early subject choice at the age of 14 (net of previous educational performance)?
- What is the association between student social background, early subject choice and entry into A-levels at age 16?
- How do social background differences in subject choice interact with gender?

Chapter 4 focuses on the role of changing institutional structure and its impact on gender differences in women's educational attainment levels in the latter half of the 20th century. In the literature there is some evidence to suggest that the concern of adapting careers to having children (or the expectation of having children in the future) is actually less important than individuals' concerns about career progress and income (Blackburn et al. 2002; Browne 2000; Franks 1999) . The research questions of this chapter are as follows:

- Do different institutional settings have an impact on the gender-specific educational differences at entry into the labour market?
- To what extent do horizontal gender differences (occupational sex segregation) and vertical gender inequalities (occupational outcomes) exist at labour market entry?
- Do different educational pathways taken by young men and women account for horizontal and vertical gender inequalities at labour market entry?

Finally Chapter 5 of this thesis examines participation patterns in various forms of adult education and learning; for the purposes of this analysis, adult learning is defined as outlined on page 6.

The core research questions include the following:

1. Does a higher level of education increase the likelihood of an educational upgrade or a sidestep?
2. Does a higher level of education increase the likelihood of participation in non-formal adult learning? (*A Matthew effect*)
3. Does having a medium level of education increase the likelihood of participation in formal adult education (*Partial equalisation*)
4. Are there differences between the genders in terms of type of adult learning in which they participate? Do women participate more or less in employer-sponsored training than men?

In the concluding chapter of this thesis I return to the core questions highlighted above and discuss them in light of the findings from the empirical chapters. The concluding section also discusses the political and theoretical implications of the empirical findings in Chapters 3-5. Data limitations as well as possible areas for further research are considered and a final summary of the core contribution of this thesis is added.

RESEARCH DESIGN

As mentioned earlier, this thesis was conducted as part of a large international comparative project, the goal of which was to examine how institutional setting in different societies shape individuals' educational opportunities over the life course. As a result the thesis reflects a 'soft comparative' framework whereby a degree of harmonisation between countries meant that decisions regarding measurable outcomes, types of dataset and certain independent variables were made based on their comparability with similar data in other industrialised societies. However it was also important that each individual country study takes into account the fact that institutional settings can vary substantially between countries and therefore measurable outcomes, types of analysis and independent variables specific to the United Kingdom, Britain and England were also adopted. In this thesis, I use the longitudinal study of young people in England (LSYPE) to explore subject choice at secondary level. I use the British Household Panel Study (BHPS) to explore gender differences in Great Britain and finally I use the BHPS to explore adult education in the United Kingdom.

OPERATIONALISATION OF THE MAIN CONCEPTS IN THE EDULIFE PROJECT

The eduLIFE project takes both horizontal differences and vertical stratification into account by examining the role of social origin on educational careers. It is divided into four phases, three of which are discussed in this thesis: (1) the role of adult education in obtaining better labour market outcomes, (2) vertical gender inequalities and horizontal gender differences at labour market entry and finally (3) differentiation in secondary schools and inequalities of educational opportunities. In the following section I outline some of the main concepts and measures employed in this project that are relevant for my thesis and how they were applied to the UK.

Differentiation in secondary level education

Two main distinctions are made in order to classify various forms of differentiation in secondary education in the eduLIFE project that influence this thesis. The first refers to *external* and *internal* differentiation; the former meaning differences between schools, the latter meaning heterogeneity within schools. The second refers to *formal* and *informal* differentiation; formal differentiation referring to regulated forms (systematic and structural diversity), and informal referring to differences between types of education which are not

formally recognised, but can have an effect on the quality of instruction and levels of students' learning (Blossfeld et al. forthcoming). There is also a distinction drawn between formal adult education (taking place in formal institutional settings and leading to accredited qualifications) and non-formal adult learning (training that can take place either internally – on the job – or externally, at learning centres or other facilities outside the workplace) in the adult learning phase (Blossfeld et al. 2014).

Table 1.1 Classification of various forms of differentiation in secondary education

	External (between schools)	Internal (within schools)
Formal	Formal school tracks School maintainer (public vs private) School specialisation (generalist vs. denominational school, etc.)	Specialisations Subjects on advanced level
Informal	Student composition at the school level	Ability grouping (class composition)

Source: Triventi & Skopek (2014) Research Design Guide – eduLIFE Phase 3, Version 2. Unpublished work, European University Institute, Florence.

Horizontal and vertical gender differences at labour market entry

In eduLIFE Phase 2, gender differences at labour market entry are explored as vertical gender inequalities and horizontal gender differences. Vertical differentiation indicates job quality while horizontal differences refers to the type of job an individual is engaged in. Vertical differentiation includes prestige, earnings and skill levels while horizontal job types can be examined as a field of occupational activities, as defined by Blossfeld whose tripartite division of occupational fields is inclined to be oriented towards activities ("which kind of work do people do") while the Singelmann (1978) categories are tilted towards industry sectors ("where are people doing their work").

Table 1.2 Classification of vertical and horizontal differentiation in occupational attainment

Vertical –job quality	Horizontal –job type
Prestige Earnings Skill level (Blossfeld 1987)	Occupational sector (Singlemann 1978) Field of occupational activities (Blossfeld 1987)

Source: Kilpi-Jakonen & Vono de Vilhena (2013) Research Design Guide – eduLIFE Phase 2, Unpublished work, European University Institute, Florence.

Gender Segregation index

In Chapter 4 of this thesis the dissimilarity index (Duncan & Duncan 1955) and the IP index (Karmel & McLachlan, 1988) are used. These measures are applied mainly to provide information about the overall size of sex segregation of the labour market in the UK for comparison with other countries in the project. The Duncan measure is based on an understanding of sex segregation as a different distribution of women and men across occupational categories; the more equal the distribution, the less the segregation. "In this respect, D measures the sum of the absolute differences in women's and men's distribution across occupations" (Steinmetz Chapter 3 p.59).

The common critique is D's dependence on the size of categories of the classification used. As a consequence, both changes in the occupational structure of the labour force, and the extent to which occupations are feminised, influence D. Therefore the IP index is also used, as this measure can be seen as a weighted form of D reflecting "relative share of women plus men which would need to change jobs in order to remove segregation" (Steinmetz Chapter 3 p.61). The IP index should not be sensitive to variations in the female share in the labour force.

The Duncan index is calculated as follows:

$$D = \frac{1}{2}\sum_{j=1}^{J}\left|\frac{F_j}{F} - \frac{M_j}{M}\right|$$

With

F total number of females in employment;
M total number of males in employment;
F_j number of employed females in occupation j;
M_j number of employed males in occupation j;
J number of occupations.

The IP index is created as follows:

$$IP = \frac{1}{M+F}\sum_{j=1}^{j}\left|\frac{M}{M+F}F_j - \frac{F}{M+F}\,M_j\right|$$

With T total number of employed persons and all other parameters defined as before

Source: Skopek, Triventi & Kosyakova (2013) Add-on to the Research Design Guide for eduLIFE phase 2 School-to-work transitions-Unpublished Paper, European University Institute, Florence

Field of occupational activities (Blossfeld 1987)

The Blossfeld classification (1987) assigns occupations based on activities (rather than industrial sector) into three broad groupings: administration, service, and production. As it is based on activities it also includes skill level rather than industrial sector.

Table 1.3 outlines the more detailed classification. In our analysis the proportion of administrative jobs among women is quite large, particularly in earlier cohorts. The largest category of women in administrative jobs in the first two cohorts are clerks.

Production jobs include agricultural occupations (individuals employed in the primary sectors, for example, fisheries, forestry and farming), unskilled manual occupations (miners, papermakers and construction workers) and skilled manual occupations such as carpenters or mechanics, with technicians and engineers representing the highest skill level in production jobs. Women are concentrated in assembly-related occupations, accounting for approximately 47% of all women in production related occupations. The largest proportion of men in this category can be found in skilled and unskilled manual occupations such as extraction or metal and machinery related occupations (19% and 26% of men respectively) [4].

In services, women are concentrated in skilled services with personal and protective services work accounting for 51% of all women in service work. This has increased over cohorts from 44% for the oldest cohort, 51% in the middle cohort and 61% in the youngest. Teaching is the second largest category for women in services but this has experienced a decline between the oldest and middle cohort, falling from 28% to 11%. Men are more often found in teaching (14% of men in services), personal and protective services (28%) and sales related services (19%). In administration women are predominantly found in skilled commercial and administrative occupations and sales related occupations, accounting for more than 80% of women in this category. Men are more distributed between policing, legal, social, cultural and related associate professionals (14%), office clerks (34%) and sales related administrative posts (22%).

4. Tables not shown but available from the author on request.

Table 1.3 Blossfeld classification of occupations 1987

Name of the occupational group	Description of the occupational group	Examples
Production		
Agricultural occupation (AGR)	Occupations with a dominant agricultural orientation	Farmers, agricultural workers, forestry workers, fishermen, etc.
Unskilled manual occupations (EMB)	All manual occupations that showed at least 60 percent unskilled workers in 1970	Miners, rockbreakers, papermakers, welders, road and railway construction workers, etc.
Skilled manual occupations (QMB)	All manual occupations that showed at most 40 percent unskilled workers in 1970	Glassblowers, bookbinders, typesetters, electrical mechanics, brewers, carpenters, etc.
Technicians (TEC)	All technically trained specialists	Machinery technicians, electrical technicians, construction technicians, mining technicians, etc.
Engineers (ING)	Highly trained specialists who solve technical and natural science problems	Construction engineering, electrical engineering, production designers, chemical engineers, physicists, mathematicians, etc.
Service		
Unskilled services (EDB)	All unskilled personal services	Cleaners, waiters, servers, etc.
Skilled services (QDB)	Essentially order and security operations as well as skilled service occupations	Policemen, firemen, locomotive engineers, photographers, hairdressers, etc.
Semiprofessions (SEMI)	Service positions which are characterised by professional specialisation	Nurses, educators, elementary school teachers, Kindergarten teachers, etc.
Professions (PROF)	All liberal professions and service positions which require a university degree	Dentists, doctors, pharmacists, judges, secondary education teachers, university professors, etc.
Administration		
Unskilled commercial and administrative occupations (EVB)	Relatively unskilled office and commerce occupations	Postal occupations, shop assistants, typists, etc.
Skilled commercial and administrative occupations (QVB)	Occupations with medium and higher administrative and distributive functions	Credit and financial assistants, foreign trade assistants, data processing operators, book keepers, etc.
Managers (MAN)	Occupations which control factors of production as well as functionaries of organisations	Managers, business administrators, deputies, ministers, social organisation leaders, etc.

Source: Table derived from Blossfeld 1987, p. 99

Differentiation in adult learning

In the adult learning phase of eduLIFE, formal education refers to a learning activity which occurs in a specific form of organisation with hierarchical stratification, division of labour, goal directedness, and societal function, while non-formal describes that which is not regulated and includes shorter institutionalised training courses that *do not lead to certificates* (or to certificates that are not fully recognised) (Kleinert & Matthes 2009). One key distinction here is that education may take place in a formal setting and may be organised in an official way (i.e. via employers through accredited teachers) but does not lead to official transferable accreditation (Kilpi-Jakonen, Vono de Vilhena, Kosyakova 2012). The added dimension for adult education is that it can be sponsored by employers or can be self-sponsored (see also Dammrich et al. 2016). Also there is a difference between adult education that leads to an educational upgrade (a higher level of education is obtained) or a side-step (a new qualification at the same level is obtained).

Table 1.4 Classification of various forms of differentiation in adult learning

	External adult learning	Internal- adult learning
	Self- sponsored adult learning	Employer sponsored and/or located at the workplace or employer's training centre
Formal	Taking place in institutions of higher education/further education leading to qualifications under the National Qualification framework (NQF)	Leading to qualifications under the National Qualification framework (NQF)
Non-formal	Certified outside of regular qualifications	Training that does not lead to a qualification

Source: Table derived from: Kilpi-Jakonen, Vono de Vilhena and Kosyakova (2012) Research Design Guide – eduLIFE Phase 1. Unpublished work, University of Bamberg, Bamberg.

LONGITUDINAL DATA AND SAMPLE DEFINITION

There are many longitudinal datasets relating to the UK available to researchers that provide information on education, training and employment, amongst them the British Household Panel Study followed by Understanding Society and the Longitudinal Study of Young People in England, which are are well established. These datasets provide excellent opportunities to study educational transitions, trajectories and pathways in the United Kingdom.

The original aim of the thesis was to follow individuals from birth through to the end of their educational careers to get a sense of cumulating advantages and disadvantages across the life course. However very few datasets allow for a complete picture of the entire educational career. Kerckhoff (1993) used the National Child Development Study (NCDS) to examine diverging pathways from birth to the labour market, including empirical analysis on early childhood, second level education, vocational education and labour market entry in the UK. Although a very rich source of information on educational careers, including extensive information on exam results and detailed information on the respondents' highest qualifications and the subjects they studied[5], the NCDS followed children born in a single week in 1958, and thus these children moved through the education system when it was transitioning to a comprehensive education system in the 1960s and 1970s, before the project of liberalisation had begun in British institutional settings. Therefore it was decided that the British Household Panel Study could be used to examine gender differences at labour market entry and cumulating (dis)advantages in adult learning, as it contained detailed information on training as well as labour market outcomes. The Longitudinal Study of Young People in England (LSYPE), also known as Next Steps, was used to understand curriculum differentiation in second level education as it follows a sample of individuals who passed through secondary level education in the 2000s and includes detailed information on the subject choice.

The LSYPE

The LSYPE is a longitudinal dataset that follows a representative sample of 15,000 students from 600 schools in England who entered lower secondary education in 2004. Students were followed up for seven consecutive years (panel waves) until the students were aged 19/20. The LSYPE was designed and financed by the UK Department for Education to provide evidence on the key factors affecting educational progress and attainment, and the transition following the end of compulsory education. The first four waves/years from 2004-07/08 contain information from both parents and students and was chosen for this study because of its rich data on students' school careers.

The longitudinal administrative registers (the National Pupil Database) contains student assessments and examinations. Also data on school performance was added to the NDP which contained "value added" scores, measuring the average gain in test score achievement for pupils in schools with respect to their expected achievement. Where possible

5. Included in follow-up studies conducted in 1981 and 1991.

the study attempted to follow individuals as they became more mobile after school completion, either to attend college or to work. The LSYPE also contained a booster sample of children belonging to ethnic minorities. Wave one contains approx. 15500 observations which drops to approx. 8700 in wave seven. The sample used in this study contains information from wave 1 to 4 as early subject choice and its impact on GCSE performance and the subsequent transition to A-levels was the main area of interest[6].

The BHPS

The BHPS is a longitudinal panel study consisting of 18 waves starting in 1991 and ending in 2008/2009. Its original sample includes a nationally representative sample of 5,505 British households. Additional samples of 1,500 households in each of Scotland and Wales were added to the main sample in 1999, and in 2001 a sample of 2,000 households was added in Northern Ireland[7]. The BHPS contains retrospective lifetime employment histories collected in wave 3 and this was used together with current employment information (also from wave 3) to examine the differences between older cohorts and the youth cohort with regard to gender differences at labour market entry. The retrospective information was merged with social origin information collected at first interview (wave 1 or 2 for all respondents) and family formation information collected in wave 2.

The BHPS does not include questions about retrospective lifetime education histories, therefore it was necessary to assume that the education individuals hold when entering the BHPS is the education that they had at labour market (LM) entry. Therefore for the analysis of gender differences, it was decided to follow the youngest members of the panel to study education trajectories and LM entry. Work-life history files were constructed using the Mare files and the first significant employment spell of the sampled individuals was extracted. The Mare files were developed between 2002 and 2006 by David C. Mare at Institute for Social and Economic Research (ISER) at the University of Essex with the aim of producing consistent work life histories using the British Household Panel Survey (BHPS)[8].

The final chapter on adult education includes all waves of the BHPS for models that examine educational upgrading, sidestepping and formal adult education, and focuses on data collected over the years 1998-2008 (waves 8-18 of the BHPS) for the employed and those

6. See chapter 3 for more details.
7. For more details on the quality of the BHPS including attrition rates and weights please see: https://www.iser.essex.ac.uk/files/bhps/quality-profiles/BHPS-QP-01-03-06-v2.pdf
8. For more information on how these files were constructed, a paper written by Mare is available at http://www.iser.essex.ac.uk/pubs/workpaps/.

participating in non-formal adult education, as it is possible to distinguish between employer-sponsored and unsponsored non-formal training from wave 8 onwards. In order to ensure that learning events that take place after the completion of initial education are captured, individuals who are studying for qualifications within the "normal age range" are excluded (see Chapter 5 for more details).

UK ORIENTATED VARIABLES AND DEFINITIONS

This section looks at variables and definitions that are unique to the United Kingdom and include the share of optional subjects students take at age 14, the definition of first significant job in Chapter 4, the NQFL and certified non-formal learning in the BHPS.

Formal external differentiation

In this study the differences between schools are measured by school type and by school quality. School quality is measured as a 'value added performance indicator' collected by the British Government and available from the National Pupil Database. The first school performance indicators (more commonly known as league tables) were produced for English secondary schools in 1992 and consisted of average test scores (for tests taken at the ages of 14 and 16) by school. The fact that these scores partially reflected differences in pupil intake was quite quickly recognised as a limitation (Goldstein & Spiegelhalter 1996) and so "value added" measures (measuring the average gain in test score achievement for pupils in schools) were introduced. This provides a measure of the school quality that is externally validated.

The role of school type in the reproduction of educational inequality has been studied extensively in the UK, particularly when the education system was under transition. There have also been several studies of the differences between private sector and publicly funded schools, but less is known about the role of different types of schools within the maintained sector. For this reason school type is included as a multi-categorical independent variable. The four main categories of "maintained" school are community schools, having the least autonomy and distinguished from CTC technical colleges, voluntary-aided/controlled schools and foundational schools. Private schools were dropped in the final analysis as they were not subject to the same performance indicators as publicly funded schools.

Formal internal differentiation

The role of curriculum differentiation in social mobility remained relatively under-explored in the UK until recently (see Chapter 1 for more details). Iannelli (2013), using the NCDS,

investigated the role curriculum differentiation plays in promoting social class mobility in the UK and in progression to more prestigious higher education institutions in Scotland and the Republic of Ireland (Iannell et al. 2015). As the Scottish and the English secondary level system are quite distinct and vary on a number of key factors (see Chapter 2, p.35) and because curriculum differentiation is less explored in lower secondary education in England (where binding educational decisions are normally assumed to take place at age 16), this study focuses on subjects taken for GCSEs. This can be considered one of the first educational decisions that students can themselves make with the help of parents and teachers. Subject choice is expressed as the percentage share of optional vocational or humanities subjects of all optional subjects taken by a student. Consequently they should be interpreted in range from 0-100. The share of optional vocational courses also appears in the analyses as a categorical variable consisting of five groups, each representing 20 percent of the range of the continuous variable.

First significant jobs in the BHPS

The suggested definition for first significant job made by the eduLIFE project is one that lasts at least six months after the individual left education, i.e. completed initial education. In Chapter 4 of the thesis the first significant job an individual obtains adheres to this definition but it also ensures that individuals who returned to full-time education for at least nine consecutive months (information from lifetime histories collected at wave 2 of the BHPS) are excluded to minimise the number of individuals whose highest level of education reflects adult education rather than the level of education at LM entry.

For this reason individuals with high general secondary education or low tertiary education who entered their first significant job before age 16, as well as individuals with high tertiary education who entered before age 18, are also excluded. Additionally individuals whose first significant job was before the age of 14 or after the age of 39, as well as those with missing information on their education level or their occupation, are not part of the sample. Naturally, individuals who have never had a first significant job are also excluded. The excluded individuals are on average somewhat more highly educated than the remaining sample, which mostly reflects the exclusion of individuals who obtain tertiary education as adults. For the younger members of the sample, highly educated individuals may also be excluded because they have not had enough time to obtain a significant job before being interviewed. This is also likely to be the reason why in our sample of the most recent labour market entrants women have not overtaken men in their education level.

The National Qualification Framework (NQF) and GNVQ

The National Qualification framework (NQF) is used to organise the myriad number of qualification types reported in the BHPS into a relatively systematic hierarchical structure in this thesis. The NQF is the standardisation of qualifications by level and type used by the British government. All types of qualification, including those which took place during compulsory level schooling, are approved and classified according to the NQF. The NQF was introduced in 1985 and consists of five levels (Figure 1.1). It was supplemented in 1991 by the General National Vocational Qualifications (GNVQ) which were aimed at linking traditional academic qualifications and the National Vocational Qualifications (NVQ) thereby establishing "a triple track of educational provision" (Brauns & Steinman 1997). The five levels are based on modules of qualifications that aim to reflect basic competencies and skills gained at that stage (Eurydice 2003). These qualification routes can be seen as different pathways through post-compulsory education in the United Kingdom as they are meant to allow progression from lower qualifications to higher levels, as well as transitions from informal routes and on-the job training to more academic formal education. The NVQ modular system is meant to allow individuals to build on previous levels of attainment with training that is often located in the workplace. Whether or not there is really much flexibility between the 'general' academic route, the GNVQs and the NVQs remains to be investigated further. For the purposes of this thesis this framework is recoded into CASMIN in Chapter 4 reflecting to some extent the distinction between a vocational and academic route as CASMIN is designed to take into account (1) the differentiation of a hierarchy of educational levels, both in terms of the length of the educational experience as well as in the required intellectual abilities and corresponding curricular contents, and (2) the differentiation between "general" and "vocationally oriented" education (Müller 2000).[9]

Certified non-formal adult learning

The specification of non-formal adult learning in Chapter 5 of this thesis includes receiving a new qualification that is not on the standard list of qualifications covered in the BHPS

9. Other possible ways to categorise educational pathways included more diversification in the process of attaining different levels of education either in the types of educational institutions attended (e.g., inclusion of educational sidesteps (such as from general to vocational upper secondary) or non-standard trajectories (such as from vocational upper secondary to university) or in combining work and study (e.g. inclusion of labour market experience gained through part-time work or gap years). One way of defining educational pathways could be the use of clusters gained from sequence analysis however this was not implemented in this case due to the relatively flexible nature of the NQF.

questionnaire. These other professional, technical, or higher-level qualifications cannot be classified under the National Qualifications Framework which nevertheless individuals included when asked to report whether or not they received a new qualification since September of the previous year'. This type of qualification as certified non-formal adult learning and is UK-specific.

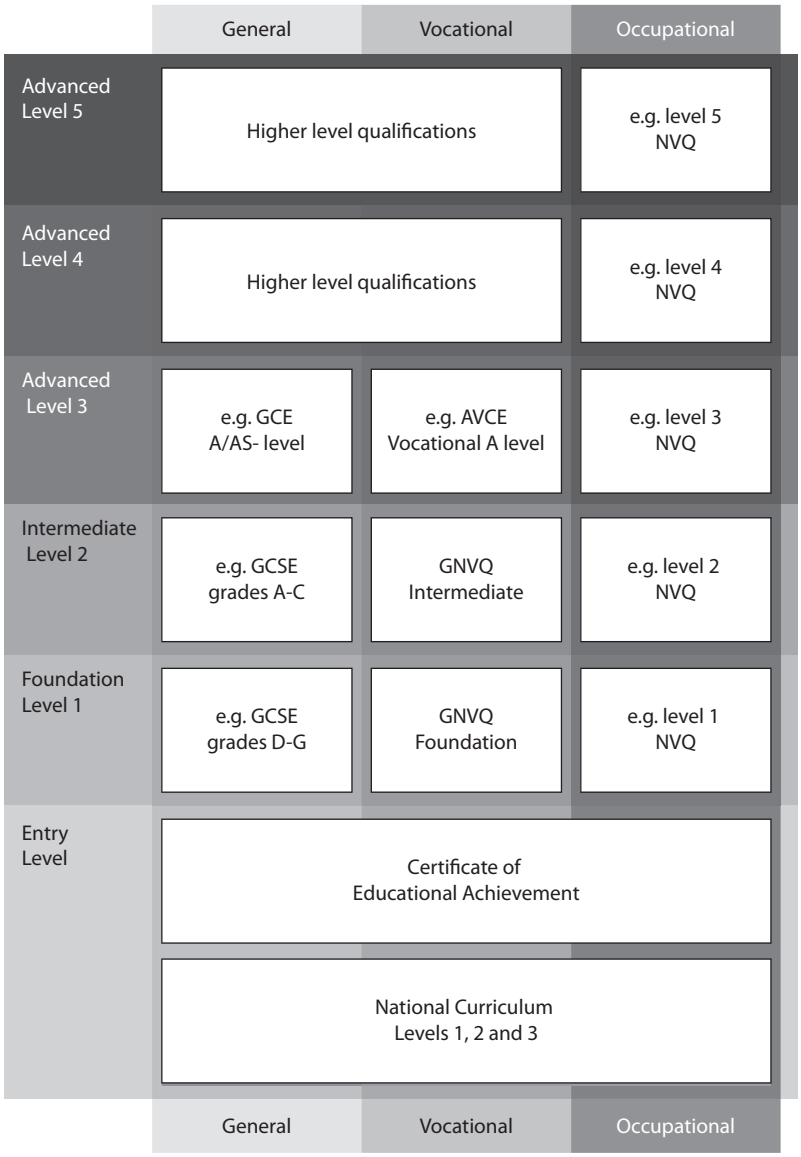

Figure 1.1 Outline of NVQ/ GNVQ

Source: Eurydice 2003

MODELLING STRATEGIES

For Chapter 3 in this thesis, there are two main model specifications; one that estimates the total effect of social background on the probabilities of entering different types of education, and one that assesses the direct effect of social background by including in the model proxy variables for pre-tracking ability (in this case Key Stage 2 math and English performance at the end of primary school). The second specification aimed to assess the 'secondary effects' of social background (Boudon 1974), that is, the effect of family background on track placement for pupils with the same level of student performance (Triventi & Skopek 2014). Additionally, the effects of differentiation could be considered for either short or longer-term outcomes. In this case, short-term outcomes were considered more appropriate to analyse the impact of early subject choice on progression to A-level and GCSE performance as variation at upper secondary level (ages 16-18) could alter trajectories considerably.

The LSYPE collected different modules of information on students at different time points. The questionnaire is split into five sections for waves 1-4, which covers household, main parent and second parent[10], young person and history. At waves 5-7 the young person themselves are interviewed. Data on subject preferences are collected in wave 1 when students are in Year 9 and actual subject choice is measured in wave 2. Demographic characteristics and school histories are collected in wave 1 and 2. Not all information needed is available in each wave therefore it was considered appropriate to use cross-sectional modelling techniques rather than panel analysis.

Ordinary least squares (OLS) and multinomial logistic regressions on pupils nested within schools are applied. Consequently, estimates across and within schools are examined; the first model is not controlled for school level characteristics, but the school context is taken into account in subsequent models after accounting for individual level characteristics. Remaining bias in the models due to school variability is eliminated by including school fixed effects. All of the analyses are weighted to account for the complex survey design. Multiple imputation was considered in order to fill in the gaps regarding missing values in the main independent variables in Chapter 3, however as the number of missing cases was low and values were likely to be missing at random, it was decided that list-wise deletion was sufficient to adequately answer the research questions. Case numbers were standardised

10. The main parent is defined as the parent most involved in the YP's education. There is no second person interview from wave 3 onwards, however the questionnaire could be conducted with both parents jointly if both were present (see Anders 2012 for more detail).

across models to allow for comparability of different model results. The probability of being a complete case does not depend on the outcome variable (i.e. the share of vocational or the share of humanities) as the share ranges from 0-100.

For pathways, the percentage of missing in the dependent variable is approx. 16%. Average predicted probabilities of academic achievement and progression for those from different educational backgrounds by share of optional vocational subjects are also shown in the analysis. These visualisations are equivalent to marginal effects since they are derivatives of predicted probabilities with respect to x and also include general differences in impact of level of vocational share on performance and progression between higher and lower educated backgrounds.

Analytical strategy using the BHPS

For Chapter 4 the modelling strategy reflects the research design guide of the eduLIFE project, where the general motivation was linked to societal development and therefore cohort comparison was recommended (Kilpi-Jakonen & Vono de Vilhena 2013). In order to study gender differences over an extended period of time over different cohorts the BHPS was reorganised using retrospective data to examine the differences between younger cohorts and older cohorts. The birth cohorts included from the lifetime employment histories are individuals born from 1940-1956 and those born between 1957-1971. The youngest cohort was constructed using the Mare files[11]. All respondents who are observed in the BHPS at the age of 16 (children of original BHPS members) are included in this sample, with the oldest being born in 1974. The sample size for the cohorts born 1940–71 is 4,192.

The Duncan index was calculated to give an overview of changes in gender segregation over cohorts in Britain. The IP index was also calculated as it is less sensitive to number of occupational categories. Moreover confidence intervals around the point estimates of the segregation indexes were computed to further support the findings.

Models were defined stepwise to observe (1) raw gender differences, (2) initial education, (3) interaction between gender and initial education, and (4) other independent variables. In each model the focus is on cohort comparison and therefore the model specification also includes gender interacted with cohort. Multinomial logistic regression models were used to investigate the factors influencing horizontal gender differences as defined by the Blossfeld classification (1987). In the second stage of the analysis, OLS regression was used to examine gender differences and educational level on the prestige score

11. See description of first significant job

and wages of the first significant job. Average marginal effects were calculated to facilitate the substantive interpretation of gender differences by occupational field.

Regarding adult education the main aims of the eduLIFE project was to establish country differences in lifelong learning regimes The empirical strategy focused on the differences between types of adult learning and education; where formal, non-formal and informal adult learning were to be separated, and whether or not they were considered additional training or re-training (i.e. side-stepping or upgrading) was taken into account.

Every year in the BHPS, individuals are asked if they received a new qualification in the previous year. When the new qualification is higher than the previous one, this leads to educational upgrading (Kilpi-Jakonen et al. 2012). When an individual reports a new qualification of the same level or below, this is considered sidestepping and applies only to formal qualifications. Panel analysis was particularly useful as it was possible to distinguish between both types.

In this thesis, the main focus is on the determinants of types of adult learning to understand how inequality in educational attainment develops over the entire life course. The data contain multiple observations per individual with binary dependent variables in each model examining upgrading, sidestepping, formal and non-formal adult education and learning. For this analysis, random effects logistic regression models for panel data in which observations are nested within individuals are applied. Repeated measures and repeated events data have a hierarchical structure which can be analysed by using multilevel modelling techniques (Steele 2005). The multi-level model contains a random error term for each individual to control for unobserved heterogeneity (Rabe-Hesketh & Skrondal 2008, p249).

This study diverges from previous studies on adult learning in the UK and many of the other studies on adult learning in eduLIFE by taking into account a number of different types of adult learning and analysing these separately. It was possible to separate between formal and non-formal learning and within non-formal learning between certified and non-certified learning as well as employer sponsored and self-sponsored learning. It was also possible to take into account training of different durations and upgrading and sidestepping, in this sense a comprehensive picture of the determinants of adult education and learning in the United Kingdom is presented.

CHAPTER 1: EDUCATIONAL PATHWAYS AND PERSISTENT INEQUALITY IN EDUCATIONAL ATTAINMENT

In 1993, Alan Kerckhoff published 'Diverging Pathways: Social Structure and Career Deflections', which brought to light some of the major mechanisms behind stratification in Britain. This section aims to expand upon this seminal study, reflecting on changes in both the literature and the UK's education system (which will be followed up in greater detail in the next chapter). I also focus on three major questions: firstly, what are educational pathways and how do they change (Pallas 2003); secondly, do diverging pathways help to explain vertical and horizontal gender differences at labour market entry (Smyth & Steinmetz 2008; Blossfeld et al. 2015); and finally, what is the role of adult education in changing pathways (Elman & O'Rand 2004; Blossfeld et al. 2014), an often overlooked aspect of inequalities in educational attainment.

Understanding how educational systems reproduce social inequalities between cohorts has been explored in great detail over the last twenty years. One of the most debated contributions of this literature is whether educational inequalities have persisted or declined in modern societies. This literature focuses on the changing institutional structures and educational expansion. Starting from the position of persisting inequality, a number of hypotheses have been developed which are particularly useful for building on Kerckhoff's contribution, one of the most important being the "effectively maintained inequality" (EMI) hypothesis (Lucas 2001). Put very simply, this hypothesis outlines the interplay between expanding educational opportunities and diversification of institutional structures. As a result of diversification in the education system, "non-traditional" educational trajectories have been increasingly common, particularly in liberal societies, and are garnering more attention from social stratification researchers (Milesi 2010; Kerckhoff et al. 2001; Pfeffer & Goldrick-Rab 2011).

Generally a more sophisticated analysis of the role of time in cumulating advantages and correcting for previous educational mistakes (Bernardi 2014; Blossfeld et al. 2014) has added to our understanding of trajectories. Moreover, both horizontal and vertical differentiation in educational systems and occupational attainment have been addressed in

more detail. Distinguishing between horizontal differences and vertical stratification is particularly relevant when exploring gendered pathways through institutional settings, as recent research has shown that men and women differ not only by income and prestige but also by field of study and occupational activity (Smyth & Steinmetz 2008; Blossfeld et al. 2015). The role of these dimensions shifts with educational expansion and industrial change, transforming opportunity structures/pathways and allowing multiple opportunities for the exploration of the linkage between social context and individual action.

THE INTERACTION OF TRAJECTORIES AND PATHWAYS

Educational transitions research is an integral part of the study of education and social mobility. Most often, it investigates major transitions from one educational level to the next (Shavit & Blossfeld 1993). Less is known about how "pathways" are created over multiple transitions, through a system or series of systems (see Kerckhoff 1993). Often the terms, "pathway" and "trajectory" are used synonymously in the literature to describe a sequence of transitions travelled by individuals or a group of individuals. However a distinction can be made between the two terms, as the definition of "trajectory" can be understood to have a destination, whereas a pathway is more vague, and not clearly defined. This is an important distinction to make as it allows us to differentiate between trajectories that are planned and those that are travelled without forethought. Destination is not the focus of a pathway; one may be simply passing through with no future intentions (travelling through compulsory education with no plans for progression to a third level).

In a broader sense, educational careers can be understood as a set of routes which divide (or more rarely, re-join) at various points (Halsey et al. 1980). At each of these points the individual has to choose or have a choice made for he/she and the choice will have important implications for the paths along which the individual will be able to travel later. These careers can range from the very simple, involving one or two transitions (Halsey et al. 1980, p.33) to the very complex, where actors' aspirations, prior performance, increased diversification in educational systems and the impact of other systems (such as the labour market) are taken into account. Pallas (2003) argues that although trajectories and pathways may both be described by a sequence of transitions, analytically they are quite distinct. A trajectory is an attribute of an individual, whereas a pathway is an attribute of a social system. "Pathways are of particular interest in their ability to illuminate structures—for example, constraints, incentives, and choice opportunities—that link different social locations within a social system" (Pallas 2003, p.168).

Vital to this understanding is that pathways can be more or less flexible. The term pathway is fuzzier than "track", as a track is more rigidly defined by the rules of the educational system while pathways can allow for informal transitions between tracks (the so called fourth track) and there may be multiple as well as hidden pathways through a system.

A new pathway may be created by individuals but only within the boundaries of institutional regulations and dependant on the flexibility of both opportunity structures and mid-level actors (gatekeepers such as employers, teachers, college administrators and the like). If individuals do not use them, older pathways may die off. There may be both formal and informal pathways through a system that coexist, supplement and overlay one another. The complex structure of liberal education systems which focus on individualisation, merit and freedom of choice lend themselves more to the analysis of pathways than to tracks. In order words, a broader understanding of tracking which incorporates "hidden" forms of differentiation and multiple pathways needs to be introduced in order to fully understand the effects of social origin on trajectories and transitions in comprehensive systems.

Increasingly, growth curve analysis is being used to define trajectories. These trajectories are influenced by mechanisms of loss and accumulation through which individuals convert different types of capital and other resources into advantages and disadvantages. Generally, in social science research, these processes are analysed as static resources impacting on one particular path, levering individuals into different positions, but they are much more complex and dynamic co-variates (time-varying) as understood in life-course research. For example, most status attainment research has treated education as fixed at the highest level of schooling an individual has completed, not taking into account educational trajectories as they occur across the life course (Kerckhoff 1993; Pallas 2003). In the UK, this is particularly problematic when analysing occupational attainment because a large section of the population obtain their highest level of qualification after labour market entry and therefore their first labour market destinations may precede their ultimate educational destination.

Gamoran (1992), drawing on the work of Sørensen (1970) concerning organisational differentiation (see the next section), identifies tracking as a form of horizontal differentiation, due to the differing status of academic programs compared to non-academic tracks. More specifically, that the experience of tracking between school systems can vary according to selectivity (the degree of diversity within the tracks), electivity (student agency – are tracks assigned or chosen?), inclusiveness (access to further opportunities) and scope (the extent and the permeability of track assignment).

Similarly, Pallas (2003) identifies eight ways in which educational pathways and the particular stratified location occupied by a student within the educational system can structure educational trajectories. The most relevant to this discussion is "*electivity"*, which is the extent that a student's own choice determines their placement – "the greater a student's opportunity for choice, the more likely that the student's social background will structure his or her educational trajectories" (Pallas 2003, p.169). As we will see, this is especially a factor in more liberal systems. Pallas also identified "*scope"*, which reflects how the stratified location impacts upon the entirety of the student's educational experience, and "*curricular differentiation"*, which is largely self-explanatory.

In short, pathways can be conceived of as institutional channels with somewhat flexible and permeable boundaries. "Pathways are well-travelled sequences of transitions that are shaped by cultural and structural forces" (Elder 1985, cited in Pallas 2003 p.168). Pathways do not set goals nor temporal norms (e.g. durations, sequences, etc.) for movement through them. Instead, they operate at an institutional level and respond to other institutional forces, such as wider societal stratification. And they often provide opportunity structures for individuals to transcend boundaries and achieve upward mobility. Individuals generally may not be aware that they are following any one particular pathway. Often, the aggregate demographic and social compositions of pathways make them appear to be more deterministic of individual choices than they actually are. Finally and most importantly, pathways respond to pressure, such as demands for institutional change.

Trajectories are constructed of transition sequences that are "path dependent", i.e. sequentially contingent on prior conditions (DiPrete & Eirich 2006), and responsive to individual "choices and family", along with other (e.g. peer) influences. Trajectories can shape pathways if enough pressure builds up on any one transition point; i.e. as educational expansion puts pressure on individuals to obtain higher and higher levels of education, more alternative routes to higher level education are created. Overall, the more rigidly defined/standardised or tracked an educational system is, the more trajectories and pathways become similar.

DIFFERENTIATION, EFFECTIVELY MAINTAINED INEQUALITY, AND EXPANDING EDUCATIONAL OPPORTUNITIES

Two major theoretical contributions can bring to light how educational pathways change and influence social inequality. Firstly, the concept of differentiation in social stratification

research, and secondly, the development of the persistent inequality literature and the "effectively maintained hypothesis" (Lucas 2001).

Institutional differentiation

Differentiation in sociology on the one hand focuses on increasing diversity in social systems as they adapt to the environment. Structural functionalists address the assumed needs and functions of a system and hence see differentiation as a component in a process of enhancing the adaptive capacity and the efficiency of social systems (Merton 1968). Diversification and differentiation (used interchangeably from this point) as a process has seldom been studied in educational inequality literature; however the consequences of the process are more tangible, e.g. the role of changing institutional settings in educational and occupational attainment. Generally, the greater the social complexity of a society, the more social strata exist by way of social differentiation. On the other hand, differentiation is also conceptualised in terms of stratification which, in its simplest form, refers to selection procedures (Allmendinger 1989). Stratification denotes the extent to which institutional units, especially secondary schools, offer "higher" and "lower" curricula and award different kinds and levels of educational credentials (Allmendinger 1989 in Kerckhoff et al. 2001). Stratification comprises two important sub-dimensions, which are tracking and selectivity (Bukodi et al. 2015), where tracking refers to the allocation of pupils to different institutions and curricula based on cognitive measures of ability, and selectivity of educational paths is understood as outlined by Gamoran (1992) – please see the previous section. Stratification as a term holds within it an implicit reference to hierarchy where individuals are sorted into ranked social strata dependent on their prior social positions. However parallel strata can exist which are in theory not ranked, but which nevertheless have differing consequences for individuals' progression reliant on their prior social positions. Sorensen (1970) outlines two different dimensions of organisational differentiation: vertical and horizontal. Horizontal differentiation within educational systems and labour markets creates a more diverse opportunity structure leading to more within-cohort variation. This is important for social stratification if these diverse positions mean that individuals from different social backgrounds are sorted into better or worse pathways.

The horizontal dimension (non-hierarchical in nature) can be defined by the more neutral term of differences. Vertical stratification also exists within horizontal differences; in other words, horizontal aspects of a given level of education play a stratifying role (Gerber & Cheung 2008). There may be informal rankings of differences which in and of themselves are

not stratified. For example, independent schools are perceived as more prestigious by parents, while science subjects might be deemed more useful in the labour market by employers. Horizontal gender segregation can also refer to the degree of feminisation or masculinisation of occupations. From this vantage point, gender inequalities might arise because women and men concentrate in specific types of occupations (Blossfeld et al. 2015).

Researchers have mainly concentrated on differentiation at the tertiary level "The structure of higher education has been transformed as it has expanded*"* (Arum et al. 2007 p.1). Systems that were almost exclusively of research universities developed "second-tier" and less selective colleges with most of the growth in this sector. Critically these institutions also diversified to cater to a wider student body as lifelong learning expanded. Horizontal differences played a major role in the UK, as socially advantaged students leveraged the system more effectively than some of their counterparts though horizontal differences. The institution type (comprehensive vs technical schools, for example) and specialisation or field of study (Iannelli 2013; Iannelli et al. 2015; Jackson et al. 2008; Van De Werfhorst et al. 2003) showed that horizontal differences can be critical in securing better structural locations.

One factor that can be considered a form of both vertical and horizontal differentiation in more comprehensive systems is vocational specificity, or the degree to which students can prepare for particular occupations within the education system and receive specific credentials. Technically, separation into subject types should not be stratified, however curricula can become informally stratified (for example, students with lower test scores in "reading and writing" may be pushed more towards more practical subjects). Again, a less obvious form of stratification can have a major impact on pathways.

Although both vertical and horizontal differentiation must be deemed part of the student experience, and although they can overlap as discussed above, Aakvaag (2015) argues that it is important not to conflate the vertical and horizontal dimensions because extensive social inequality is not as endemic to modern institutionally- differentiated societies as expected by "pessimist" theorists considering the extension of individual freedom (as outlined by Aakvaag 2015 p.134). Instead, comparative studies (e.g. Esping-Andersen 1990; Hall & Soskice 2001) have shown that institutional differentiation is compatible with very different stratification systems and this can be seen from comparing the egalitarian Scandinavian societies to the much more non-egalitarian Anglo-American system. "Thus institutional differentiation and social stratification are different and partly independent structural principles that for analytical and empirical reasons should be kept apart" (Aakvaag 2015 p 353).

This leads us to the final structural distinction: namely, the division of educational systems into those that are more or less standardised. Standardisation, as the name suggests, refers to the uniformity of education quality and is considered on a national level, i.e standardised systems are more uniform than non-standardised ones (Iannelli et al. 2015). Standardisation is a structural dimension of educational systems on a macro level and is often used as an independent variable in analysing the effect of educational systems on occupational outcomes.

It may also be understood as a form of horizontal differences between societies, as the extent to which a system is standardised can have direct consequences for the educational attainment level of students. However, when and how standardisation is implemented in the system can cause great variation in the degree to which this structural characteristic impacts inequalities. In most cases schools are highly standardised at primary level, while different degrees of standardisation exist at the lower and upper secondary level in most Western societies. Ayalon and Gamoran (2000) and Bol et al. (2014), highlight the interaction between the dimensions of standardisation and stratification. They found that the combination of curriculum differentiation and centralised, standard examinations reduced inequalities in student achievement. Although confirming that socio-economically rooted inequalities are more prevalent in strongly tracked systems, Bol also notes that centralised exams at secondary school level can mitigate socio-economic inequalities. In his analysis, Britain displays relatively low levels of tracking (comprehensive) as well as centralised exams.

Iannelli et al. (2015) have found that within the British context, for Scotland subject choice at school is the primary factor through which a family history of limited access to HE manifests, while in Southern Ireland, prior educational attainment is the key component. In a more centralised system, these effects would be reduced, particularly a centralised system that would weight grades more heavily than subject choice.

Effectively Maintained Inequality

The second major theoretical contribution which comes from the persistent inequality strand of literature is Lucas's theory of effectively maintained inequality, a theory which sees institutional diversification reintroducing inequalities into comprehensive educational sectors. **"**The educational transitions literature flows from the long held interest in whether the effect of social background on educational attainment differs over time or across societies" (Lucas 2001 p.1645). In analysing the social reproduction of social position with the expansion of the educational system in the final quarter of the 20th century, a problem arose. As Breen and

Jonsson (2005 p.225) succinctly put it; "traditional linear regression of years of education on social origin tended to conflate changes in the marginal distributions (e.g. educational expansion) with changes in the underlying association between origin and educational attainment". Mare (1980) proposed the use of logit models that treated progression as a discrete binary choice: students either continued to the next level of educational attainment or dropped out. Shavit and Blossfeld (1993) found that while the effects of students' origins decline across transitions, there is little change in these effects across cohorts.

Two major explanations of these findings have been developed: (1) The Life Course Hypothesis (LCH) emphasises that as children age they become more and more independent of parents, and (2) that the maximally maintained hypothesis (MMI) which predicts that inequalities in education will only begin to decline when enrolment for the most advantaged groups reaches "saturation" (Raftery & Hout 1993). Shavit and Blossfeld (1993) established that the MMI thesis was only partially substantiated, as working class individuals began to obtain higher levels of education even though saturation in several societies had not yet been reached. Educational expansion was also not uniform across countries and expansion happened faster at the primary and secondary levels. In some countries this led to a bottleneck at the transition to tertiary level with the result that access to tertiary level actually declined across cohorts in some countries (Shavit and Blossfeld 1993). Their overall conclusion was that educational inequality remained stable (persistent). This was contested by Breen et al. (2009) who determined that there was a reduction in educational inequality over time (the two exceptions being Italy and Ireland).

Combining the transition and tracking literature and building on the MMI thesis, Lucas (2001) argued that qualitative differences in educational systems serve to maintain the status quo in the transfer of social position from one generation to the next. EMI states that socioeconomic inequalities are "maintained" by students from higher socioeconomic backgrounds who take advantageous curricula/positions that affect their post-school destinations. EMI also sees dropping out as "only one small subset of potential locations to which students can move, and students who decide to continue also decide within which curriculum they will continue" (Lucas 2001, p.1651).

As Breen et al. (2009) argues, focusing only on educational level will overestimate the decline of inequalities between classes - if differences in terms of field choice or track have become stronger as inequalities in level declined. Boliver (2010), using the BHPS, determined that social class inequalities in British higher education to be both "maximally" and "effectively" maintained in time periods associated with educational expansion. Quantitative

inequalities in enrolment in higher education remained stable during the first stages of expansion and declined during the expansion of the 1990s, only after the enrolment rate for the service classes had reached a saturation point. The decline in inequality was mostly confined however to those from an intermediate background. Additionally, with regard to effectively maintained inequality, working class enrolment in a degree program or "old" university courses was one-sixth that of service class enrolment controlling for year (Boliver 2010).

EDUCATIONAL PATHWAYS AND CHOICE IN COMPREHENSIVE SYSTEMS

Class differentials in educational attainment can also be seen as a consequence of primary and secondary effects (Boudon 1974). Primary effects reflect differences in performance at a given point, and secondary effects reflect differences in choices made at different branches or particular transition points. Primary effects may appear more immediate, as they occur at first transitions. However, secondary effects are cumulative in nature as they continue to impact at the time of subsequent choices and may ultimately have a far stronger effect if numerous choices are made at different junctures (Blossfeld et al. 2016 forthcoming).

The expansion of higher levels of education has led to a more complex series of choices that students must make in order to reach their labour market destination. In analysing individual choices, in recent decades there has been a resurgence of rational choice models focusing on educational decision-making. Two major theoretical perspectives have been highly influential in this respect - those associated with Goldthorpe and those associated with Bourdieu. The former attributes class inequalities in secondary effects to the desire to avoid downward mobility among the most advantaged on the one hand, and on the other, to a fear among disadvantaged classes to fail in less-familiar pathways and roles when vocational options, perceived as safer, are present ("relative risk aversion" or RRA). The latter, however, attributes on-going educational inequalities to scripts and beliefs operating at a subcultural level as well as to the lack of cultural capital (Wakeling 2009).

Goldthorpe (2000) classifies mobility strategies for individuals from advantaged and disadvantaged backgrounds as coming "from above" and "from below" respectively. Individuals approaching their academic decisions "from above" are concerned by the risk of downward mobility and thus invest heavily in academic success to mitigate the risk. By contrast, individuals coming "from below" seek to apply their limited resources for the best

return, which can incentivise early labour market entry or the acquisition of vocational qualifications. Even between individuals with identical ability, there can be a significant difference in their motives and thus in their cost benefit calculations.

Wakeling (2009) notes that "Goldthorpe seeks to formalise educational decision-making to view choice as an essentially rational process. Bourdieu, on the other hand, seeks to problematise the very nature of educational 'choice' (Wakeling 2009 p.77), where higher education is an environment that most benefits individuals with better cultural and social backgrounds. If correct, this supports the theory of effectively maintained inequality as it positions individuals from more advantaged backgrounds to capitalise on qualitative variation in the educational system.

However, both Goldthorpe and Bourdieu emphasise constraints over opportunities, which has drawn criticism (Wakeling 2009). Also Devine (2004) found that middle-class origin is insufficient alone to prevent downward mobility, and that the aspiration to attend university is present among the working class in spite of the theory of RRA.

Tilly (1998) coined the term "opportunity hoarding" to describe the idea that advantaged children of lower skill levels can prevent higher-skilled but less advantaged children from accessing opportunities by attaining access to opportunities and effectively closing them off to their less advantaged peer - Reeves and Howard (2013) describe the tendency for advantaged individuals to maintain their position as the "glass floor" effect. However, Tilly's observation in this regard also highlights a tendency for individuals to pursue achievement within their own category rather than seeking to break out of categorical distinctions. Tilly argued that institutions and organisations are key to understanding persistent inequality, however it has also been noted that inequalities play out on an individual level - parents can also influence the futures of less skilled children positively through exposure to social and cultural capital (such as educational recreation, museum visits, extra-curricular activities, etc.).

One possibility is that RRA is a theory that very neatly explains class differentials in educational attainment and education level but when considering the role of social origin measured by parental education it is possible to imagine a different mechanism at play. It is important to remember that in modern Europe, young people stay longer in education resulting in their independence being often delayed. Those from lower socio-economic status backgrounds are transitioning earlier, usually via labour market entry or by surpassing their parents' experience in the educational system. In other words, parents from higher socio-economic backgrounds may influence their students' decisions for a longer period, and

whether or not a pathway is selected by a parent or by a student has direct consequences for the type of educational pathway that students take, particularly for gendered educational pathways (see Imdorf et al. 2014).

According to Sullivan et al. (2010) rational choice theorists run the risk of overlooking the variation in attitudes and prevailing beliefs among social classes, beliefs which can impact whether decisions are made by the children themselves, by parents or by teachers. Ball et al. (2002) use the term "embedded choosers" to refer to students who carry unspoken cultural assumptions about their trajectories to higher education, and "contingent choosers" to refer to students who lack access to information in order to make the necessary choices. Pfeffer (2008) argues for the importance of the parents' own educational experiences in their children's attainment. He divides parental knowledge of the education system between content knowledge and strategic knowledge, meaning that both a parent's knowledge of the determinants of success in the education system (content knowledge) and their knowledge of the consequences of education decisions for later educational opportunities (strategic knowledge) determine their ability to help their children successfully navigate through their educational careers. Strongly tracked systems, discussed previously, can be seen as an impediment to attaining educational equality, especially if children are segregated when very young. Pfeffer (2008) has found that less stratified, more flexible systems allow for students who wish to change to a different pathway, perhaps to correct previous choices with which they are no longer satisfied. However, because of increasing diversification, students are left to negotiate an ever- expanding array of pathways. In more comprehensive systems students from lower educated backgrounds are more likely to be found in less prestigious courses (McMullin & Kulic, forthcoming; Dryler 1998). More rigid standardisation may lead to fewer pathways through the education system (and therefore greater consequences for educational choice in the beginning of an educational career), but greater horizontal mobility may not lead to more equality of opportunity in the long run if students from lower class backgrounds are less able to take advantage of that flexibility. This is not to say, however, that some do not make it through where they would have been previously excluded.

In short, open systems put the onus on the student/individuals knowing what to choose and when to choose it; therefore socio-economic status and parental influence can manifest themselves for longer. Parental influence differs by socio-economic status and this is important for the declining effect of social origin over education transitions as it may not equally be the case for students from more or less educated backgrounds. Also, more institutional differentiation means that the equality of opportunity could arguably become

even more dependent on informed decision making. Just as there are more opportunities to correct previous mistakes, there are also more opportunities to make choices that have unintended consequences for a higher level in the education system. As the children of the lower educated negotiate their way to these systems they may already be making decisions that curtail their options, not only with regard to the type of institution they enter but also what they can do once they enter. On the other hand, parents with higher levels of education may be better able to steer their children towards subjects that maximise their chances of entering the next level of education and a more prestigious field. In most countries, parental education is positively correlated with graduation in a top higher education institution and a prestigious field of study (Triventi 2013).

DIVERGING TRAJECTORIES OVER TRANSITIONS: CUMULATING (DIS)ADVANTAGES AND COMPENSATORY ADVANTAGES

One of the clearest indications of an educational system's allowance for choice is the "flexibility of the linkages between structural locations at successive stages of attainment" (Kerckhoff et al. 2001, p.8). According to Pfeffer (2008) there are more such linkages in the complex British and German systems than in the simpler American and French systems. However, Germany's system has less flexibility than the others because the pathways leading to levels of educational attainment are more restricted. Where students are located in the structure at each stage limits their possible locations at the next stage (Pallas 2003). For Kerckhoff (1993), school to job linkages have grown increasingly ambiguous as more and more adolescents achieve a secondary school education. As upper secondary level becomes universally attended, upper class families will try to take advantage of qualitative differences. "They will be increasingly more likely to enrol their children in the academic track to secure them qualitatively better education that will pay off afterwards" (Panichella & Triventi 2014, p. 673).

With the increasing availability of lengthening longitudinal datasets, resource accumulation and how individuals' trajectories diverge from one another over educational transitions has been explored more fully, with several mechanisms coming more to the fore, such as the role of path dependency and compensatory advantage. The role of time as a dimension of educational inequality has also been taken into account through analysis focused on duration - how long it took before an event or transition occurred and whether or not there

is a "Matthew" or "equalising effect" in adult education (Merton 1968; DiPrete & Eirich 2006; Blossfeld et al. 2014).

Cumulative advantages

The early theoretical statement of cumulative advantage process by Robert K. Merton (popularised as the "Matthew Effect") links the micro level of individual trajectories to the macro context of pathways; cumulative advantage processes occur within and are shaped by a given "opportunity structure" (Pfeffer & Goldrick-Rab 2011). This insight has been central to the work of Kerckhoff that shows how institutional features of secondary school produce "cumulative effects of structural deflections". Originally the Mertonian concept of a cumulative advantage process is where "future accumulation depends upon current accumulation" (DiPrete & Eirich 2006). The second form coming from Blau & Duncan (1967) referred to persisting direct and interaction effects of a status variable, where the interaction effects implied group differences in the returns to socioeconomic resources. The study of cumulative advantage in educational stratification has focused specifically on whether or not tracking produces growing inequality in educational outcomes over time (DiPrete & Eirich 2006). For example, early access to educational resources allows individuals to access and persist in higher level tracks, to progress rapidly from secondary to post-secondary education, be less likely to drop out once they enter and to obtain wage advantage upon labour market entry (Elman & O'Rand 2004 p.125). Life course scholars see cumulative advantage working in patterns of "diverging trajectories" (DiPrete & Eirich 2006)

A "Matthew effect", often expressed colloquially as "the rich grow richer and the poor grow poorer", can be applied to education if human capital is considered in place of financial capital. The human capital that allows individuals to obtain desirable outcomes – knowledge, skills – accumulates more education with time, while individuals lacking human capital may struggle even to maintain the educational level they had attained early in life.

Kerckhoff and Glennie's (1999) interpretation of cumulative advantage as a cumulative exposure process closely follows the formulation of cumulative advantage by Blau and Duncan outlined above. They argue that time is not a constant feature of this process but that there are episodic contexts (or moments) which can been especially forceful or even on turning points in the trajectory.

Compensatory advantages

Another potent question regarding the examination of modern educational systems is whether or not previous educational mistakes can be corrected later in an individual's career. Compensatory advantage is a mechanism of social stratification that complements cumulative advantage and path dependence according to Bernardi (2014, p.1) who proposes that "path dependency in the context of a life course means life course trajectories become 'locked in' by some critical preceding condition". A compensatory effect may occur "if inequality is greater among the worst-performing students than among others" (Bernardi & Cebolla 2011), i.e. students from socio-economically advantaged backgrounds and with poor school results would still be able to proceed to higher levels of education, whereas students who come from disadvantaged backgrounds with poor school results would exit the system. In more colloquial terms it can be understood that the children from disadvantaged backgrounds move on or out, while the children from the advantaged move upward.

Preceding conditions include prior educational performance and structural locations (i.e. track location). The active role of parents and families in influencing children's track placement and performance is the object of study of a rapidly developing literature on "shadow education". Compensatory disadvantage focuses on the interactions between different types of inequality as well as on the link between socio-economic position and the ability to change tracks or educational pathways over time. This is supported by research which highlight that placement on a particular path largely determines final outcome (Kerckhoff 1993; Kerckhoff, Haney & Glennie 2001). In this direction there has been work done on the role of adult education in correcting previous educational mistakes (Blossfeld et al. 2014) and on the ability of parents to compensate for children's prior achievement or track placement.

Divergence: traditional and "non-traditional" educational trajectories in tertiary education

A recent contribution by Milesi (2010) shows that only a minority (and mostly the socio-economically advantaged) take part in what she terms "traditional trajectories" towards college and after entry towards the completion of a third level qualification. "Traditional" trajectories refer to a straightforward and timely progression from one stage of the education system to the next. For example, a traditional trajectory to earn a degree is defined by "entry into college immediately after being awarded their high school qualification, full-time attendance at a four year college and continuous enrolment until graduation". Non-traditional

trajectories include: (1) Completing high school through an alternative route; (2) Delayed entry into college; Or (3) interrupting college enrolment one or more times and attending post-secondary institution with an "open door" admission policy. This can be extended to take into account the role of adult education. Milesi (2010) finds that following a non-traditional trajectory reduces students' chances of completing a post-secondary degree or to enrol in college.

Merton states that in a "merit-based" system where resources are limited, students who achieve early success have the opportunity to amass cumulative advantage, while their classmates who "fail" to achieve early may find themselves facing cumulative disadvantage with limited opportunities to correct their trajectory. Without support from more educated and informed parents, the theoretical pathways that exist in a more flexible system may effectively be closed to students who are unaware that these pathways exist or how to avail themselves of them. As access to education among lower socio-economic classes continues, it is clear from the above information that the advantaged will leverage horizontal differences to maintain advantage, and that the scope for gaining this is greater in a more flexible system.

CHANGING LABOUR MARKET DESTINATIONS, HORIZONTAL GENDER DIFFERENCES

There are several competing arguments that discuss whether there has been divergence or convergence in gender inequality over time that are highlighted by the eduLIFE project. For convergence, neoclassical theories of human capital and sociological theories of modernisation and post-industrialism are outlined (Blossfeld et al. 2015). If human capital theory in its strictest sense is correct, then as women outcompete men in human capital acquisition, they should reap greater rewards in the labour market. and gender inequalities should even reverse over time due to the increased productivity higher qualifications can bring. Modernisation and post- industrialism theories also predict an overall decline in social inequality over time because achievement becomes increasingly important over time while ascription decreases in modern societies (Blossfeld et al. 2015).

Theories of divergence predict that gender inequalities will persistent despite the gains in education made by women, for several reasons; (1) Education systems are organised horizontally as well as vertically meaning that the genders are filtered and/or choose different educational pathways, and consequently are sorted into different positions in the labour market; (2) Sociological approaches highlight the roles of socialisation, peer pressure and the

persistence of gendered stereotypes, where individuals are continually confronted with gender typical stereotypes and norms in early childhood which later manifest in gendered identities, preferences and values and labour market behaviour. And (3) statistical discrimination, which argues that employers will continue to treat women and men differently (Arrow 1973), not a result of employers' tastes, but rather a result of coping with uncertainty regarding productivity levels in the absence of perfect information(Blossfeld et al. 2015).

These theories can also be divided by supply side arguments and demand side arguments, stereotypes about appropriate work for men and women may contribute to the gendered nature of occupations, and this may be driven by both supply and demand side forces where gender ideologies shape career decisions and employer preferences. Social closure arguments assume that status groups work to maintain both privilege and advantage by reserving as many opportunities as possible for group members (Tomaskovic-Devey, 1993). When applied to occupational sex segregation, this demand-side theory suggests that white men will attempt to maintain their traditional labour-force advantage (Krymkowski, & Mintz 2008).

Charles (2005) highlights the ideological dimension of sex-segregation – the feminisation of certain occupations such as care, service and interpersonal interactions, which are characterised as 'female' work. This is more obvious under post-industrialism. Occupations go beyond the generation of income and prestige for individuals, and have a major impact on the social space. Opportunities and pathways for individuals can be created or 'blocked' by perceptions of gendered work. More specifically, the post-industrial restructuring discussed above (the expansion of the services sector and economic rationalisation) can be linked to the presence of more females in the labour force, and to the feminisation of particular roles, leading to pink collar "occupational ghettos" (Charles and Grusky 2004).

Most relevant for this thesis, Buchmann and Charles (1995) have established that choices made at younger ages tend to be more gender-stereotypical than choices made later. Individuals who leave school and enter job-specific training at younger ages are thus more likely to enter gender-typical roles and this can contribute to horizontal differentiation. As younger individuals are more likely to choose educational pathways that match their gender identity (Imdorf et al. 2014) horizontal gender differences may partially reflect this early sorting. Moreover, the more educational programs are occupationally specified (and the less prevalent academic programs), the more likely it is that gender-typing can occur, or the more students can base their choices for their own gender identity construction, particularly with

regard to masculinities (Imdorf et al. 2014). Therefore vocational qualifications are generally more subject to gender segregation.

Gender differences in subject choices at secondary and tertiary level are well-known (Jin et al. 2011; Jonsson 1999; Van De Werfhorst et al. 2003). In addition, if it is the case that students can choose alternative subjects, "boys and the socially privileged increase their concentration in advanced science courses" (Ayalon 2006, p. 1196). In the UK, boys are about 9 percentage points more likely than girls to study triple science; however this is reduced when controlling for school and attitudes/preference (Jin et al. 2011). Therefore, the question is not whether these differences exist but how do these gender differences accumulate and interact with other dimensions of inequality? In Britain, there were clear sex differences in the patterns of postsecondary schooling. Educational expansion mainly took place in the tertiary sector with the increase in polytechnics. Women were more often found taking up positions in polytechnics which constituted most of the increase during educational expansion. Theoretically, when these institutions were granted university status in 1992, this should have increased the prestige of qualifications obtained in these institutions. Later, traditional female tertiary qualifications such as nursing were also given degree status and, while this changed the level of educational attainment women gained, it did not change their labour market destination or translate to gains in labour market outcomes.

Labour market stratification research typically focuses on changes in vertical inequalities (such as wages, prestige, status) over time and has not focused as much on more horizontal differences such as field/ industry and type which shape opportunities. Research concentrating on gender has been quicker on the uptake here as it has highlighted how horizontal differences in the labour market and educational system can impact on vertical inequalities. Gender differences in wages, occupational prestige and class are partially the result of sorting into different educational pathways (tracks or fields of study) and different labour market sectors or industries.

Opportunity structures change thereby influencing the horizontal dimension of stratification; for example, initially after World War II, women were steered toward training in occupations that did not undermine gender norms; however, as women were recognised as more permanent members of the labour force, their educational opportunities changed (but their trajectories/destination did not necessarily shift until later). Economic restructuring led to an increase in service-related occupations (traditionally seen as female-dominated) and a decline in production occupations (traditionally male-dominated) leading to increased female labour force participation. This, coupled with the movement toward contest mobility and, in

theory, a later age of decision making (binding educational decisions at age 16 and influencing occupational choices), decreased gender segregation over time in Britain (see Chapter 4 in this study).

Kerckhoff (1993) found that for the National Child Development Study (NCDS) cohort going through the British education system during the 1960s and 1970s, men and women took different pathways to the labour market. Women's educational careers were more often channelled through the regular school structure and those who had relatively high qualifications by the age of 23 were very likely to have obtained them either in secondary school or through a traditional trajectory into higher education. In contrast, many more men than women obtained their relatively high qualifications only after labour market entry through further education. Essentially, this means that women's educational trajectories are more reflective of so-called "traditional/academic trajectories" while the trajectories of men more often reflect the "non-traditional (non-academic)" route. Theoretically, women should have gained the advantage of better labour market positions after school completion and in terms of prestige level, they do (see Chapter 4). However, this is possibly because service sector occupations are generally more prestigious than typically male- dominated manual occupations.

There was a general tendency for women in larger firms to have jobs with a higher occupational prestige than women who worked in smaller firms. For either sex, though, there was no overall association between firm size and prestige. Women and men were distributed differently across industrial sectors defined as core and periphery production, and core and periphery service by Kerckhoff; and the distributions are consistent with the usual employment patterns of both. Women were much more concentrated in the service sector whereas men were much more often found in the production sector. There were few women in the peripheral production sector at age 16 and at age 23 with men more evenly distributed than women. Overall, the majority of the cohort (62% overall) were in the same industrial sector at age 23 that they were in when they entered the labour force, suggesting that first labour market entry is important for horizontal differences between men and women.

Kerckhoff (1993) also found that employers responded positively to their employees having taken some form of post-secondary school course. This was particularly pronounced for women as taking a course in higher education led, on average, to a job with a prestige level nearly half a standard deviation above comparable women without such a course.

ADULT EDUCATION AND LIFELONG LEARNING: AN EXPANSION OF EDUCATIONAL PATHWAYS IN MID-LIFE CAREERS

Formal schooling in later life (e.g., participation in credential programs) is increasingly becoming a recurring phase ofthe life course, and informal schooling is less dependent on age (Pallas 2003). Life course scholars have shown that rewards in later adulthood accumulate to those who follow traditional life course pathways, where education is followed by continuous full-time work, an increasingly rare possibility and never a reality for some sections of society, such as the poorly educated or mothers who are likely to have interrupted careers.

Prolonged time in school due to the rise in educational attainment has resulted in more frequent combinations of work and school life. The demands of caring for young children directly impacts the type of training that individuals are able to access, both at or outside the workplace (especially for women). Whether or not social welfare systems are prepared to facilitate mothers' labour force participation is an important consideration for most western European governments. Whether or not investment is directly transferred to individuals via welfare payments or whether employers are encouraged to sponsor the training of their employees, all have consequences for the educational pathways available to individuals, and the option to take them or not.

In addition, labour market flexibility is also important for the returns to adult education. More liberalised labour market systems, where turnover costs are low, mean that adult education translates to a move to less precarious employment positions, while for insider-outsider labour markets, where turnover costs are high and there is a significant amount of churning in precarious positions, adult education does not seem to help secure more non-precarious positions (See: Vono de Vilhena et al. 2016). Elman & O'Rand (2004) consider educational transitions and trajectories in adulthood to be occupationally focused – either for the purpose of maintaining status or “future-proofing” one's career by enhancing mobility. They identified several factors that influence the likelihood of a return to education later in life. Firstly, status maintenance and cumulative dis/advantage models as discussed above suggest that workers with fewer resources are the least likely to retrain, along with workers with high levels of job continuity. Workers who have followed less linear career pathways (such as women) are more likely to re-enter schooling. Workers with college degrees are more apt to re-enter education and educational attainment and family situations have an impact on adult education uptake across all work pathways (Kilpi-Jakonen et al. 2014).

Kerckhoff takes on board the daunting task of tackling vocational educational opportunities and training in the labour market in the UK in "Diverging Trajectories" and this programme of research can be extended further to look at the role of adult education. Under the British system, the primary differentiating factor between members of the cohort after secondary school is the number and kind of examinations undertaken and passed, which contrasts sharply with the US system. The uptake of further education courses was high, and apprenticeships and on-the-job training played a large role in qualification acquisition for many school-leavers.

Adult learners in the UK can be very young, relatively speaking, as students typically complete initial education (for example a bachelor's degree) by age 21, and there is the option to go back to education multiple times. This, coupled with pressure to provide life-long learning opportunities, technological innovation, the low signalling power of British secondary level qualifications and educational expansion has led to a large number of individuals obtaining their highest level of education later in life. The flexibility of the system is key to high participation rates as credentials can be obtained both in formal educational settings or in non-formal contexts, or as courses move increasingly online, from home. Distinguishing between formal and non-formal modes of adult education as well as employer sponsored/non-sponsored adult education being very important because those who are marginalised from the labour force cannot benefit from sponsorship.

Due to the generally high incentives for individuals to invest in adult learning in the UK, groups who are most overlooked by employers have higher probabilities of taking part in non-formal learning that is not employer sponsored, and, to some extent, also formal education. This includes women, the non-employed, older individuals and those with less education. Those who are in better labour market positions with already mid-high levels of education are more likely to receive on-the-job training as employers invest in those employees they deem to be more productive. The costs of formal education may also make this type of education more attractive to employees who can get their employers to pay their fees and support them during their (part-time) studies. Therefore, employers' preferences to train the highly skilled are expected in the UK context to affect the educational stratification of not only employer sponsored non-formal learning but also of formal education. Second chance learners (those who obtain an educational upgrade) and sidesteppers (those who want to obtain new qualifications at the same level or lower) are common. More specifically for the UK, educational upgrading has a slightly stronger impact than sidestepping when it comes to movement out of non-precarious employment

In sum, adult education has become more common in western societies, partly driving institutional diversification, but the nature and quality of early education choices continue to affect pathways even into adult education. In the UK, groups who are overlooked by employers are well–represented in this type of education, particularly in non-formal adult learning. However, there is also clear evidence of a Matthew effect, as those with higher levels of education are more likely to participate in adult education. Individuals can exhibit their agency by choosing to invest in adult education in order to remain competitive in the labour market, but how they do this and to what extent it is path dependent, is constrained by institutional boundaries, and prior structural locations and trajectories, with some subgroups benefiting more than others. In understanding the role of education in the social reproduction of class positions, it is not enough to look at inequalities of opportunity in initial education and first labour market positions anymore - rather, it has become clear that different types of adult education have an increasingly important role to play in cumulating inequalities.

CONCLUSION

This chapter has aimed to elaborate on Alan Kerckhoff's work on diverging pathways by focusing on changes in the literature on educational attainment and on three main questions. Firstly, what are educational pathways and how do they change? Secondly, do the mechanisms by which girls and women accumulate social advantages differ from the ways that men do? And finally what is the role of adult education in changing educational pathways? Kerckhoff explored divergences and defections, and his work is crucial for understanding how structural locations influence cumulating advantages and disadvantages.

In sum, his work demonstrates how the institutional structure – through sorting at school level, the post-compulsory level and later at industry level – affects the level of achievement likely to be attained by individual learners as well as indicating their further opportunities throughout their entire life-span. Since his study, more work has been done to treat the heterogeneity of varying structural positions in increasingly loose educational systems.

This chapter follows up on this and agrees with Pallas (2003), arguing that an educational pathway and a trajectory do not necessarily constitute the same thing. The interaction between these two concepts can be used to understand how "open" and rigidly stratified systems shape educational inequalities in different ways. When "hard" divisions are less relevant, the "softer elements" of educational and cultural capital come into play more strongly. Although educational expansion has resulted in higher levels of education becoming

theoretically more accessible, those in more privileged positions are better able to exploit horizontal differences either by taking more direct routes to higher levels of education or by changing trajectories, i.e. compensating for prior educational mistakes. Informed decision-making is crucial in more liberalised systems as "freedom of choice" places greater responsibility on parents and students to choose wisely. Parents from highly educated backgrounds may be able to take better advantage of multiple educational pathways because of their prior experience and other resources, while those from lower educated backgrounds have no direct experience of later educational pathways. Moreover, "A life course perspective implies that educational trajectories ought not be studied in isolation from their social institutions and from the other social roles associated with participation in those institutions, because such roles are intertwined in complex ways" (Pallas 2003 p.170). Gender studies highlights this topic when outlining the struggle of women to balance work-life commitments.

In looking at the changing labour market structures and female employment patterns, it becomes clear how changing horizontal differences (such as a decline in production and a growth in service sector occupations) structure inequality. It is also possible to examine how gender norms influence educational decisions and transitions. Despite the fact that girls generally out-perform boys at school and university, they still enter less prestigious fields of study or educational institutions more often than not. In short, institutional settings such as the labour market and education system change in terms of how they both horizontally and vertically stratify individuals. With educational expansion and increased differentiation, multiple diverging pathways through education means that men and women have multiple options and can part ways as they make different choices. The earlier these decisions take place, the more gendered the trajectories.

Finally, one of the least explored areas of the educational attainment literature is how adult education influences educational inequalities (Elman & O'Rand, Blossfeld et al. 2014). Life course scholars have shown that rewards in later adulthood accumulate to those who follow traditional life course pathways where education is followed by continuous full-time work – something which is becoming an increasingly rare possibility. The expansion of the educational system has also partly been an expansion into adult education. Here, whether a course is formal or non-formal, sponsored or non-sponsored, has important consequences for social inequalities (see Chapter 5 of this thesis).

The eduLIFE project defines more complex ways of understanding and analysing differentiation[12]. More diverse educational pathways and their influence on student opportunities and trajectories are taken into account through a focus on "hidden" or informal differentiation through secondary level education and adult learning, while changing labour market structures and gender differences are also examined more closely. The English contribution is presented in this thesis and differs from Kerckhoff's work in that it explicitly analyses the role of school type after the introduction of the comprehensive system and the introduction of freedom of choice into the system. It analyses the role of horizontal as well as vertical stratification in gendered labour market outcomes and it highlights the part of adult education in cumulating educational disadvantages later in life.

12. See the Research Design section for more details

CHAPTER 2: EDUCATIONAL REFORM, INSTITUTIONAL DIFFERENCIATION IN THE UNITED KINGDOM AND PERSISTING EDUCATIONAL INEQUALITY

The principles of "equity" and "efficiency" have dominated the English education system for almost a century. These concepts have underpinned several major reforms and, coupled with a concern for choice and flexibility as well as the decentralised nature of responsibility for the United Kingdom's schools, has led to a diverse system, particularly at the tertiary level. Typically, the UK's educational system is considered to be low in standardisation and stratification relative to continental systems. However, at the secondary level, it is more stratified and has a greater degree of standardisation than the USA, largely because it is funded by central government with centralised examinations. In addition, there were attempts to standardise the system through the introduction of a set-curriculum at the compulsory stage and a National Qualification Framework at the upper secondary/late tertiary stage (see Eurydice 2003). One striking fact that has been ascertained using international datasets such as PISA and TIMSS is that family background is more strongly correlated with student test scores in the UK than in many other countries. While the most disadvantaged schools have shown some signs of catching up in terms of performance during the first decade of the 21st century, it is unclear whether this can be attributed to the inclusion of vocational/functional qualifications or to an overall reduction of poverty (McNally 2011 p. 210).

Speaking mostly about post-compulsory education, Heath and Cheung (1998, p. 74) argue it is important not to oversimplify the pattern of change in the UK system; education and training continue to have a "complex and frankly rather disorganised character". As a result, one of the greatest challenges students face is navigating this system in order to obtain qualifications recognised by employers. It is therefore important to explore how complexity in the English education system arose and how this has influenced individual opportunities. In the following sections, I explore the historical development of the English education system and how this affects the modern opportunity structure at compulsory and post-compulsory level. I briefly outline different opportunities by gender and examine in more detail the structure of modern day adult education in Britain. I aim to describe how educational reform, institutional differentiation, and subject choice work together to form educational pathways

where students with similar levels of ability but different socio-economic backgrounds separate into different trajectories.

THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

The British Isles are made up by the islands of Great Britain and Ireland. The United Kingdom (UK) includes four countries: England, Northern Ireland, Scotland and Wales. The island of Great Britain includes the countries of England, Scotland and Wales.

Data: The Longitudinal Study of Young People in England includes information only on England.

Data: The British household panel study (BHPS) includes information on the four countries of the United Kingdom.

Figure 2.1 The United Kingdom of Great Britain and Northern Ireland

Source: Longitudinal Study of Young People in England / British Household panel study

Firstly, it is important to outline the territories of the United Kingdom. The full nomenclature of the territory is "The United Kingdom of Great Britain and Northern Ireland" which is located on the British Isles (a geographical term). The British Isles include: the island of Ireland and the islands of Britain, the latter consisting of the island of Great Britain itself and the much smaller Isle of Man and Channel Islands. These islands can also be referred to as the Atlantic Isles. The UK is divided into four separate countries, England, Scotland, Wales and Northern Ireland, which have varying degrees of autonomy from one another. England, Scotland and Wales are located on the island of Great Britain, while Northern Ireland is located on the island of Ireland. When referring to Great Britain (GB), one refers only to

Scotland (SCT), Wales (WAL) and England (ENG) while the United Kingdom (UK) includes reference to Northern Ireland (NIR). Whilst these countries education systems are quite similar they have diverged with regard to administration and control, the designation of educational institutions and the qualifications system (Eurydice 2003), with Wales and England closely resembling one another. England, Wales and Scotland have moved to a more comprehensive system at secondary level. Northern Ireland, however, was left out of this process and kept the more selective tripartite system (see Breen, Heath and Whelan, 1999). Scotland has its own distinctive examination system at the secondary level, with more similarity between it and continental European examination systems (such as the Baccalaureate) than it has with the English system (Heath & Jacobs 1999). The basic legal framework for education in Scotland consisted of a series of Education (Scotland) Acts which are Acts of Parliament of the United Kingdom but apply specifically and only to Scotland (Eurydice 2003).

Generally speaking local authorities in Scotland allocate children to schools in their area by defining catchment areas for each school, however parents have the right to express a preference for the school they want their child to attend and the local authority must grant the request wherever possible (Eurydice 2011). This is similar to England and Wales, where parents were given the right to choose their child's school as a result of the 1988 Education Reform Act (see below for more details). The main school division is between private independent schools and publicly maintained schools in all three British countries. However, there is less formal external differentiation between government maintained schools in Scotland than in England or Wales. In Scotland, all publicly funded secondary schools are comprehensive and most offer six years of secondary education starting at age 12 and finishing at age 17/18. In England and Wales, there are several types of publicly funded second level schools (see below for more details).

Students prepare for final exams in the last two years of compulsory schooling throughout the Island of Great Britain. These are known as Standard Grades in Scotland and GCSEs in England and Wales. In post compulsory schooling, students can take subject specific exams known as Highers in Scotland and AS/A-levels in England. There are no limitations on the number and type of subjects that students can take in Scotland for Highers(see Klein et al. forthcoming), whereas students in England and Wales normally take three A-level subjects, there are no limitations on the number and type of optional subjects that students can take to GCSE level in England and Wales.

SCHOOL TYPE AND EDUCATIONAL INEQUALITY AT SECONDARY LEVEL IN THE BRITISH EDUCATION SYSTEM

During the last century, the British education system has undergone many reforms which have direct implications for the educational inequality and social mobility observable today. The first reform (The 1944 Education Act) put in place a tripartite system supposedly marking a move away from "elite" education to a more "meritocratic" system (Jackson 2013). The tripartite system divided pupils among three different types of school (Grammar, Secondary Modern and Technical) based on their performance in the 11-plus exam that was taken at the end of primary school at age 11-12. Grammar schools admitted the highest performing students, focused on an academic curriculum, and prepared students for university. Technical schools offered more vocational training while secondary modern schools offered a basic education to the majority of the age group (Heath & Jacobs 1999, p.2). This act was also highly significant for educational inequality as it introduced for the first time a compulsory school-leaving age of 15 and applied to all children regardless of the gender or background. However, the understanding of "equality of opportunity" that came to dominate English education in the immediate pre-war and post-war period owed more to a concern over wastage of talent than regard for "common culture" and social justice. Class difference itself was not necessarily objected to; class differences among those with equal ability, however, could not be tolerated (see Halsey et al. 1980 p.5). Even though some working class children did gain access to prestigious grammar schools and, subsequently, to post-compulsory education, an individual's chance of access was dominated by the cultural inequalities, which influence the academic abilities of pupils. Additionally the absolute mobility of working-class children did not increase as much as had been hoped, while relative chances did not improve because middle-class children simultaneously increased their participation in post-compulsory education (Glaesser & Cooper 2012). However, these inequalities were recognised and, over time, dissatisfaction with inequalities in the sorting process of the tripartite system led to a second major reform - the move to a comprehensive system.

The comprehensive system was introduced in 1965 and gradually replaced the tripartite system (Heath & Cheung 1998). Secondary modern and technical schools were merged to create comprehensive schools and the 11-plus examination, which previously sorted students, was abolished for most state sponsored ("maintained") secondary level schools. It was hoped that by ending "formal tracking" in terms of ability, class bias in access to better or more

prestigious schools would be reduced. However, fee-paying private schools (also known as "independent schools") continued to select students based on their academic performance. Local Education Authorities (LEA) who had primary responsibility for schools in their jurisdiction were also allowed to opt out of the reforms, and while the vast majority decided to adopt them, a small number decided to continue to operate under the older system, with the result that although the vast majority of schools are comprehensive, grammar schools and secondary moderns have continued to operate today. Heath and Cheung (1998) also argue that as a result of the move to a comprehensive system, credentials have replaced school type as a basic principle of educational stratification and that the move saw the UK transition from a "sponsored" education system to a "contest" system[13]. Nonetheless, one of the most important divisions in the English comprehensive system today is still between the publicly maintained non-selective comprehensive schools and the privately funded, fee charging and academically selective independent schools (Eurydice 2003).

Within the comprehensive "maintained" or government-funded system, students are divided between community schools, foundational schools, voluntary-aided schools and voluntary-controlled schools[14]. The division into these types of schools came about as a result of the School Standards and Framework Act in 1998. The ownership of these schools varies but all must have a governing body, which may have a greater or lesser degree of autonomy in organizing their internal affairs. Community schools are fully funded by local education authorities, they are non-selective (taking students of all abilities), and mixed gender. Voluntary aided and voluntary controlled schools are semi-autonomous "maintained" schools, established and run by independent bodies (often churches). Voluntary-aided schools bare more of the costs of the school than voluntary controlled schools and have more autonomy in the sense that they can employ staff and set admissions criteria, however both types of schools follow the national curriculum. Foundational schools are what have remained once the voluntary controlled schools had been allocated. They are also mostly funded by the LEA but are owned by an independent body (see Eurydice 2003). The proportion of children attending

13. Regarding sponsored mobility, those who already hold elite positions are able to bestow similar status on those they see as suitable, effort and strategy are not routes to these positions. Contest mobility on the other hand can be obtained by effort in open competition. (Turner 1960).
14. Other types of schools that were established too recently for inclusion in the analysis include: free schools which were also introduced in 2010 and traditional or converter academies. Free schools are state schools that are free from local authority control and are subject to a funding agreement. They do not have to adhere to the national curriculum. Traditional academies are underperforming existing schools that are allocated an academy sponsor (universities, FE colleges, education charities and business sponsors) that take over management of the school. Converter academies are high performing schools who can opt out of LEA control (New Schools Network 2015).

independent schools stayed relatively stable at more or less 10% from 1993-2008; in contrast, the proportion attending autonomous schools within the state sector increased by roughly 10% from 25% to 45% for voluntary-aided, foundation and trust schools. Attendance at community schools declined over the same period from approximately 65% to 52%[15].

In addition to division by State support; British schools can be divided according to religion and gender in all three countries. While mixed gender (coeducational) schools are more common, there are also single sex schools still in operation (most often in the private sector). The switch to co-education came in tandem with comprehensivisation of the public sector. There was no decline in the prevalence of single-sex schooling within the private sector (Sullivan 2006). Almost all religious schools are voluntary-aided schools, with very few foundation, voluntary-controlled schools or academies having a religious character. According to Allen and West (2011) parents reporting a religious affiliation are more likely to be highly educated, with a higher income and occupational class. They were also more likely to send their children to a religious school if they had a higher income.

There are approximately 2,500 independent schools in the UK, educating around 615,000 children, which is about 7 per cent of all British children (Eurydice 2003). There is a strong association between private school attendance and the higher education level of parents (Sullivan & Heath 2002). Using the BCS70 whose population would have attended second level school in the 1980s, a clear hierarchy of schools have been found to exist in terms of social origin, cognition and qualifications, with private schools ranked on top, then grammar schools, comprehensives and secondary moderns. In addition, attending a private school is a powerful predictor of gaining a university level qualification from an elite institution (Sullivan et al. 2014) and strongly associated with entry to the top class position (NS-SEC class 1) among graduates of prestigious universities (Wakeling & Savage 2015). In this study using LSYPE data, Figure 2.2 below shows that the children of the highly educated are more often in attendance in independent schools (42%) than any other group who are present at these schools. In contrast those whose parents have a compulsory education or below (i.e. GCSE [28%] or some/no qualifications [20%]) are located in community schools.

15. See Figure 4 in Ryan and Sibieta 2010 p. 11 for more details.

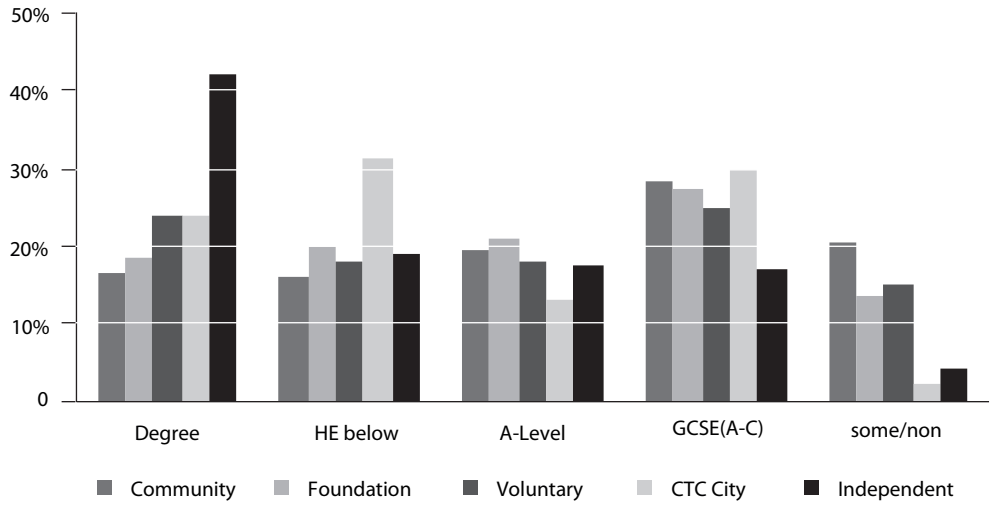

Figure 2.2 Barchart illustrating the proportion of students in each school type by parental education level

Notes: Merged LSYPE waves 1-6 and NDP data. Boost sample not included. Sample=13,253

Demographic variables measured in wave 1 and data are weighted by wave 1 cross-sectional weights.

Uncorrected chi square =1011.7712, P =0.000

Source: Authors' calculations using LSYPE.

SCHOOL QUALITY, FREEDOM OF CHOICE AND "EFFECTIVELY MAINTAINED" EDUCATIONAL INEQUALITY IN COMPREHENSIVE EDUCATION IN THE UK.

Recent policy changes, designed to introduce greater choice and competition to previously comprehensive systems, have prompted a possible differentiation between a marketised comprehensive system and a system that is fully comprehensive (Green et al. 2003). The idea of marketisation has been applied more often to higher levels of education where privatisation of public systems and education as a commodity is possibly easier to accept due to its voluntary nature; however in earlier levels of education this may be seen as more problematic. Nevertheless, a system defined by school choice with a large private sector can undermine the non-selective aspect of a comprehensive system in several ways, mainly in terms of asymmetry of information regarding school quality as well as setting up potential barriers to "better" fee paying schools. Green et al (2003) note that in terms of the equality outcomes

these marketised comprehensives (e.g. in the US) have higher levels of inequality, thus having more in common with selective systems rather than fully comprehensive systems (Clancy 2006). In the British case, Margaret Thatcher's government introduced various reforms that undid some of the previous Labour government's comprehensive system (Heath and Jacobs 1999). Schools were allowed to opt out of local authority control, and measures to generate competition between schools were adopted. In addition the 1988 Education Reform Act on the one hand embodied the liberalising principles of flexibility, "freedom of choice" and "competition" by giving parents in England the right to choose their child's school and obliged all publicly maintained (funded) schools to produce performance indicators. On the other hand, this act introduced a standardised curriculum with "core" subjects to be studied in every state funded school.

The publication of performance indicators[16] ideally allowed parents to make an informed selection, while the introduction of a standardised curriculum was designed to improve the signalling to universities and employers. One of the unintended consequences of the reform, however, is that schools in competition can make strategic choices and respond to incentives provided by "league table" measures of school performance. Schools have considerable freedom in terms of the course and subjects they can offer and in the way they present those choices to their pupils (Jin et al. 2011).

McNally (2011) notes that discussions about parental choice usually focus on increasing parental choice rather than on the barriers to parental choice. For example, the right to apply to any school is often limited in cases where the school in question is over-subscribed and applies other selection criteria. A common criterion is proximity to the school, thereby favouring affluent families since living close to a "good school" is not financially accessible to lower-income families. Also, parents from high socio-economic backgrounds are more likely to be able to access information such as league tables, and interpret them more accurately (West et al. 1998). This is important because it highlights how social, cultural and educational capital enables children of richer/more educated parents to find less obvious pathways/trajectories to more advantaged positions.

As discussed in the previous chapter of this thesis "effectively maintained inequality" as outlined by Lucas (2001) focuses on differences within an education level. The argument is that as more and more students from lower socio-economic backgrounds attend higher and higher levels of education, those in the best positions are forced to differentiate within levels

16. See Research Design section

(horizontally) as opposed to across levels (vertically). In this case, even though students from all social backgrounds attend second level education and theoretically students have access to any type of school, a social class gradient in the quality and type of school they attend is still present. For example using LSYPE data it is evident that children of the higher educated are concentrated in better performing second level schools (Figure 2.3).

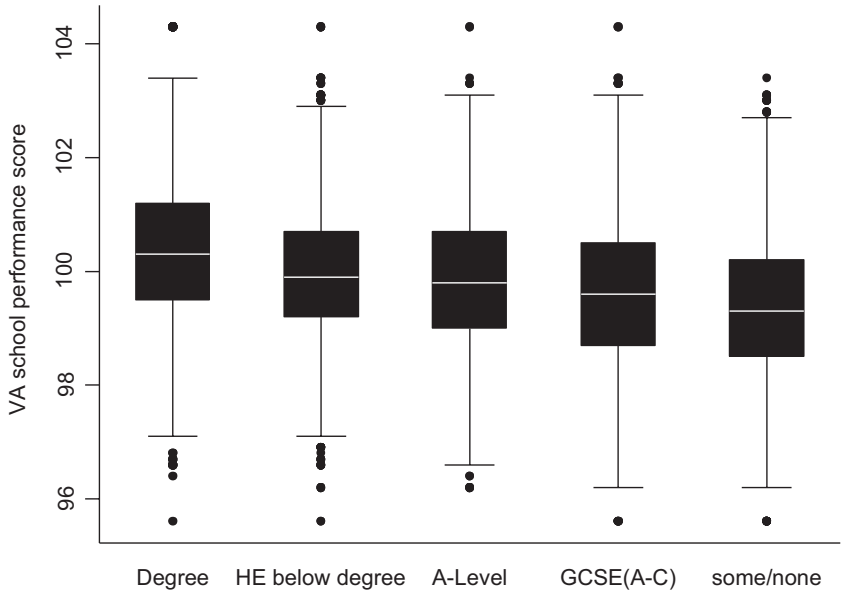

Figure 2.3 Boxplot illustrating the range, interquartile range, and median(central line) of value added school performance scores by parental education

Notes: Merged LSYPE waves 1-6 and NDP data. Boost sample not included Sample=13,253

Demographic variables measured in wave 1 and data is weighted by wave 1 cross-sectional weights.

Source: Authors' calculations using LSYPE.

Scores above the threshold of 100 show that the school has added to the achievement of its students, whereas scores lower than 100 mean that, on average, students from those schools had worse results than similar students at the national level. There is a clear gradient between type of school and value added performance. Better schools also recruit better performing pupils. Figure 2.4 shows entry into a different type of school by Key Stage 2 exam (at the end of primary school) performance in Math and English combined. On average, those who enter community school are lower performing than those who enter independent schools. CTC technical schools also recruit higher performing students in Math and English. This has important consequences for student progression later on since the quality of the school

directly affects their options regarding the type of subjects that they take for their GCSE exams at the end of compulsory schooling as well as influencing their academic performance (see Chapter 4 of this thesis for more details).

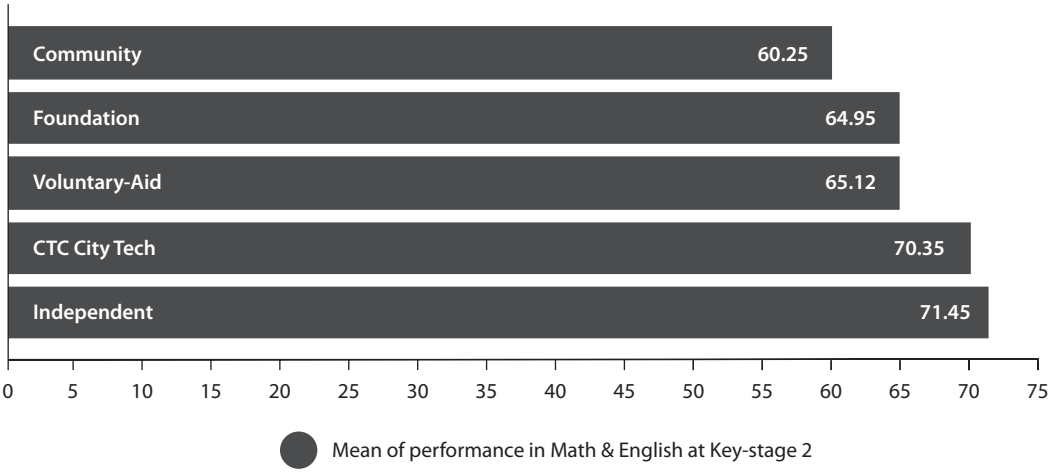

Figure 2.4 Barchart illustrating the proportion of students in school type by parental education level

Notes: Merged LSYPE waves 1-6 and NDP data. Boost sample not included. Sample=13,253

Demographic variables measured in wave 1 and data is weighted by wave 1 cross-sectional weights.

Source: Authors' calculations using LSYPE.

NATIONAL CURRICULUM STANDARDISATION, THE EXAMINATION SYSTEM AND EARLY SUBJECT CHOICE: INFORMAL PATHWAYS THROUGH THE COMPULSORY EDUCATION SYSTEM

The examination system of the United Kingdom is also complex. In the modern compulsory education system in England and Wales, the national curriculum is divided into four Key Stages (McNally, 2011). Primary school is split into Key Stage 1 (KS1) and Key Stage 2 (KS2) with students transitioning from primary school to secondary school at age 11 after taking Standard Assessment Tasks (SATs) at the end of KS2. The results of the KS2 assessment are published at school level and are intended for school targets. They are not used to assess student ability or aptitude for the purpose of selection into secondary school[17].

17. Primary school organisation is not central to the research questions of this thesis. For a broader discussion of primary school organisation please see Eurydice 2003.

Secondary school is divided into Key Stage 3 (KS3) and Key Stage 4 (KS4). Students are assessed again before they make their transition to KS4, usually at age 14. English students also select their subjects for the General Certificate of Secondary Education (GCSEs) at this stage. GCSEs in Math, English (and Welsh in Wales) and at least one Science course are a compulsory component of the National Curriculum, along with Design and Technology, ICT, Modern Foreign Languages, Physical Education and Citizenship (Eurydice 2003). Although the curriculum was standardised in that most schools offer these core subjects, students are not limited with regard to the number of optional subjects they take; therefore while in theory the complexity of second level education was reduced, there is still a great degree of flexibility regarding what choices students (and parents) can make.

The vast majority of schools specialise in purely academic options, with GCSEs generally remaining the most widely offered qualification, offered in 98% of schools. Theoretically, it is not until students turn age 16 that their choices become limiting for their further educational career. However leading universities often take into account GCSEs, sometimes expecting students to have a high proportion of A and A*grades (the minimum threshold level is a C or better in English or Math regardless of the direction of further studies). There is also a range of approved "entry level" qualifications aimed at pupils who are not likely to achieve a grade G[18] at GCSE. Even though success in these examinations are not compulsory for progression from KS4 to KS5 (ages 16-18), most institutions require students to achieve five good Passes at GCSE level before admitting them to an A-level course (Eurydice 2003). In addition to grading there is also tiering in place. Tiering is when different exams are offered at different levels of ability for the same subject. Higher-level exams are offered for students who wish to achieve grades A*-D and Foundation level is offered to students who can achieve C-G. GCSE Math has another intermediate exam at grades B-E. Exams are government regulated and supervised by examination boards that are largely self-sufficient[19]. In addition to GCSEs, vocational qualifications were made available at the secondary level as well as vocational GCSE being introduced in 2002 and replacing the Part One General National Vocational Qualification. (see Figure 2.10 below for more details

18. There are 8 Grades ranging from A*-F that students can obtain a GCSE in (Eurydice 2003). A* is the highest grade attainable and G the lowest pass grade. There is also grade U which means ungraded or unclassified and therefore a GCSE is not awarded. GCSEs are also part of the National Qualification framework (see below). A grade D-G is a level one qualification and grade A*-C is level 2. Level two is more desired for labour market entry and is also needed to progress to level 3 qualifications.
19. OCR-Oxford Cambridge and RSA Examinations, AQA-the assessment and Qualifications Alliance, Edexcel (the Business and Technology Education Council (BTEC) and University of London Examinations and Assessment Council (ULEAC) merged), WJEC-Welsh exam board and the CCEA-Council for the Curriculum, Examinations and Assessment.

of the National Qualification Framework). These include Applied Art and Design, Applied Business, Applied ICT, Applied Science, Engineering, Health and Social Care, Leisure and Tourism, and Manufacturing (Eurydice 2003). Other qualifications offered by second level schools include: Vocational Related Qualifications (VRQs) which are offered by an overwhelming majority (83%) of schools, followed by Basic Skills and Business Technology Education Council (BTEC) qualifications, both posed by around 57% of schools (Jin et al. 2011).

A centralised examination system and the choice of school have a large impact on the pathways students can take after their completion of compulsory education. Independent schools are not required to provide the national curriculum but they are subject to inspections by central government (Eurydice 2003). A centralised examination system can act as a counter-measure that offsets the impact of social background on student achievement because schools are held accountable for the performance of all their students. This encourages them to invest in lower track students (Bol et al. 2014). This can be a relatively objective signal of academic achievement (Bishop 1997; Fuchs & Wößmann 2007; Horn 2009). However as success in GCSEs is central to the performance indicators of schools, "there is clear concern that schools may attempt to "game the system" by identifying comparatively straightforward vocational courses, which nonetheless receive generous GCSE 'equivalencies…" (Jin et al. 2011:9). However, Jin et al. (2011) also note that the schools that were strong adopters of vocational qualifications also appear to have improved their GCSE math and English performances and that these schools would be most likely to have a high percentage of students who are likely to benefit from vocational courses.

In addition to school type and standardised exams there is a gradient in the type of subjects taken for GCSE examination by parents education level. This is so because (1) schools with more resources may be able to offer better choices and (2) highly educated parents with better knowledge of the education system may steer their children towards subjects that help them enter similar social positions to the ones they themselves occupy. Having a parent with a degree level education is correlated with children taking no vocational courses at all, even when other personal and family characteristics are accounted for (Jin, et al. 2011:80). Van de Werfhorst et al. (2003) using the NCDS, find that children from a higher social background achieve a higher standard in both the humanities and scientific subjects in primary and secondary school and are more likely to choose to study medicine and law, independent of ability, at third level in Britain.

Sullivan et al. (2010) go one step further and examine social stratification of the motivation behind student choices. They find that choices are not individual but rather socially structured, as the subjective factors that influence choices (academic self-concept, preferences, who informed their choices) are highly dependent on social background, gender and other objective student characteristics. They provide evidence that parents' education level has a role to play in whether or not they influence their children's decisions; for instance, a high academic self-concept as well as a preference for both English and science is clustered with a lack of student choice (choices were reported as being determined by teachers and parents) and whether or not a parent had a degree level education. These finding may have important implications for the life course hypothesis explaining the diminishing impact of social origin over transitions by the growing independence of students as they mature. It may be the case that students from higher social backgrounds have parents who remain involved in their education for a longer time. One possible explanation for this is that parents who have obtained higher levels of education are better able to advise their children of what later levels require and how they are structured as opposed to the advice given by lower educated parents.

CHANGING PATHS TO THE LABOUR MARKET: POST-COMPULSORY EDUCATION AGES 16-18

In the 1990s and 2000s, additional changes were made to the English education system and influenced the progression opportunities of students, particularly for those taking non-academic subjects. Concern about the "skills gap" led Tony Blair's Labour government to introduce a wide range of vocational qualifications for ages 16-18 (under the New Deal program) which also increasingly became available at schools, while GCSEs in vocational subjects were introduced into secondary schools in September 2002 (Eurydice, 2003). As a result, the line between what is studied in schools and what is studied in colleges of further education has become increasingly blurred (Eurydice 2003) and post-compulsory educational pathways have become progressively complex.

Generally speaking, British educational attainment is most often measured in terms of qualification levels obtained or certificates earned. In the past, apprenticeships and on-the-job training were common sources of increased qualifications after leaving secondary school, especially for men (Van De Werfhorst et al. 2003). An even more common source of additional qualifications today is further education, meaning courses taken at technical

colleges and colleges of further education, institutions that are roughly comparable to technical institutions and community colleges in the US.

A more comprehensive system with lower levels of institutional sorting means that students receive more general education upon finishing compulsory education. Therefore, individuals can enter the labour market directly after compulsory schooling ends at age 16 with general skills and then acquire occupation-specific knowledge and qualifications in the labour market through on-the–job training. In this case, occupational qualifications are typically orientated towards firm-specific requirements and training is not standardised across firms. Theoretically the system is flexible to horizontal and vertical mobility *vis-a-vis* vocational qualifications. These routes could notionally be envisioned as "a fourth track", allowing students to continue to university level through tertiary level education in colleges of further education, or to enter academic A-levels with lower level GCSEs. Some prestigious institutes of higher education consider the success and type of GCSE result obtained at the end of compulsory schooling, thus creating a less visible trajectory which favours early achievement (contributing to the Matthew Effect discussed in Chapter 1). Jackson (2013) identifies two transition points in the stylised English education system: transition at age 16 from compulsory to non-compulsory education based on GCSE results, and transition at age 18 to university degree based on A-levels and vocational courses.

Students can then continue to study through a more academic route, namely, A-levels which are sub-divided into two parts; students can study four subjects for AS levels (y12, typically at the age of 17) before continuing on with three subjects for the A-levels (y13) in 6th form colleges. A-level courses are the bridge between second level and university. They can also pursue more vocational qualifications such as a higher level Business Technology Education Council (BTEC) or other vocational qualification until the age of 18, or they can enter the labour market directly after completing their GCSEs. Although a large proportion of students make this transition to A-level (52% as outlined by Jackson), approximately (16%) are not involved in either the labour market or education[20].

20. Recently the Department for Education announced that all those aged between 16 and 18 years of age are now obliged to be either in full time education or part-time education and training.

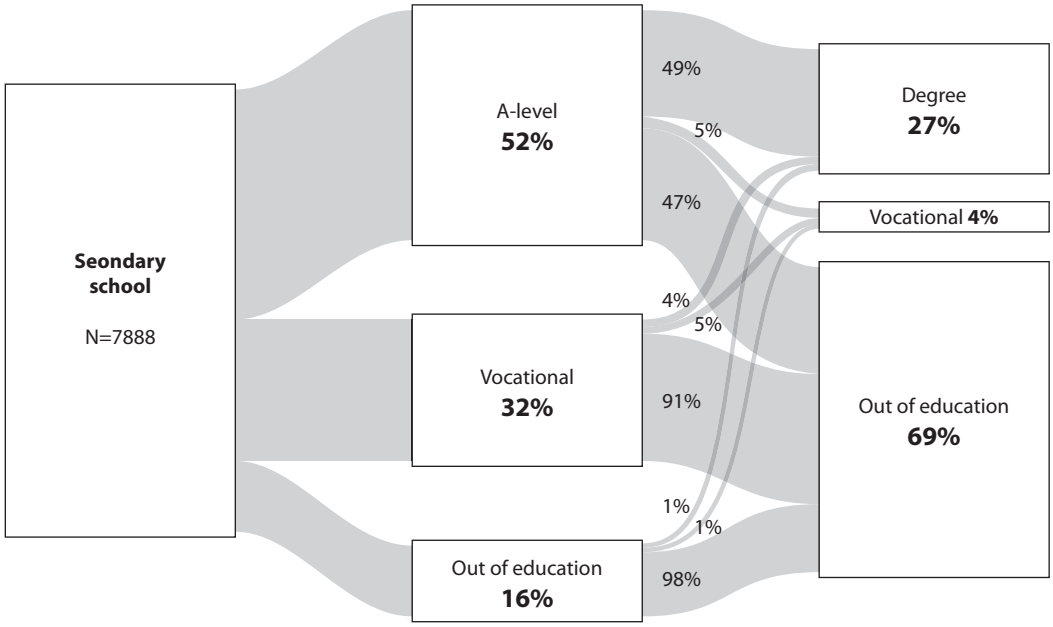

Figure 2.5 Important educational pathways through the stylised education system

Source: Jackson (2013 p.255), data from the youth cohort study born in 1986.

Crawford et al. (2011) identify six possible positions that a young person can occupy between ages 16-18, divided by whether or not students are working or studying full-time or participating in a combination of both. The final category holds students who are "Not in Education, Employment or Training" (NEET). This group is often considered to be a major concern for policymakers. They also found that young people who leave school and enter their first jobs without training at age 16/17, 17/18 or 18/19 were not more at risk of becoming unemployed 5 or 10 years later, compared to their peers who continue in full-time education (without work), or those in training on the job. However, being NEET between the ages of 16/17 and 18/19 is associated with worse wages and employment outcomes in both the immediate and long term future.

Figure 2.6 Six types of activity young people are engaged in at this stage

Source: Crawford et al. (2011, p. 4)

Data from different waves or sweeps of the Youth cohort study show the changing distribution of students in education or employment across cohorts or "the virtual disappearance of a job market for minimum-age school leavers and the increasing dominance of the educational system" (Smith 2000 p216). Seventy-two per cent of 16 to 17 year olds were in full-time education in 1996 compared to 48% in 1989, while those reporting being in a full time job or in training in 1989 dropped from 23% and 24% to 7% and 12% respectively by 1996.

Pursuing A-levels has benefits for students who wish to attend more prestigious universities. Dolton and Vignoles (2002), examining returns to post-compulsory mathematics study, find that individuals with an advanced (A-level) mathematics qualification earn 7%-10% more than similarly educated workers without this qualification, net of prior performance. Subject choices at A-level affect access to students' preferred courses. University and some socio-economic differences with regard to subject choice start to become clearer. Students from different backgrounds choose subjects that will be useful for them later on for specialising in the same occupations as their parents. For example, the children of Higher Professionals (Group 2) were more likely to take Maths/Science-based subjects than any other social class group (Table 2.1 Cambridge assessment factsheet) while the children of Lower Managers and Professionals (Group 3) took more Humanities-based subjects than any

other social class group and any other subject area. Interestingly, the children of the routine and manual classes, while generally more distributed across subjects, have the highest percentage of continuing in math. This may reflect both their selected nature and the fact that math is a core subject in school so they are guaranteed to have taken it by the GCSE level.

Table 2.1 Percentage of students from each social class group in the survey taking some of the Science-based, Arts-based, Language-based, or Humanities-based subjects at A2 level

	Subject	Hi- Manager	Hi- Prof	Low-Man & Prof	Intermediate	Routine & Manual
Science Based	Maths	24.9	29.7	23.6	23.2	26.6
	Physics	12.9	15.5	9.2	10.4	10.7
	Chemistry	19.7	23.5	16.3	16.4	18
Arts Based	Art & Design	14.6	16.3	15.4	14.0	11.9
	Music	0.9	3.2	2.2	3.5	0.4
	Media	9	9.4	13.3	10.9	9.4
Languages	Eng. Lang	15.5	10.4	9.4	9.8	10.2
	Eng. Lit	10.3	14.5	15	13.1	13.9
	French	6.4	5.5	5.2	2.8	2.5
Humanities	History	22.7	24.4	21.5	15.2	16.4
	Psychology	20.2	21	25.3	22.5	25
	Sociology	11.6	7.1	12.2	12.1	13.1

Source: Cambridge Assessment fact sheet 1 (2007a) based on Vidal Rodeiro (2007)

GENDER DIFFERENCES IN SCHOOLS: SUBJECT CHOICE AND THE BEGINNING OF GENDERED PATHWAYS

As mentioned earlier, Ayalon (2006) found that when students can choose alternative subjects, boys and the socially privileged increase their concentration in advanced science courses. Advantages of these early choices may accumulate over time as the number and type of subject can influence the number of future educational routes from which students can choose. Using LSYPE, Jin et al. (2011) find that boys are about nine percentage points more likely than girls to study triple science for GCSE examinations; however they also find that this difference is slightly reduced when controlling for school characteristics, and is reduced further when prior attainment is included and finally is reduced again when differences in students' attitudes and preferences are taken into consideration. Boys are less likely to stay on after Year 11 than girls, conditional solely on child and family characteristics. However when differences in school characteristics and students attainment preferences and attitude are controlled for the effect is reduced considerably. Using LSYPE it is possible to see the small

but vital gendered differences in subject choice as early as Year 10. More boys take vocational, technical and science subjects while more girls take performing arts. Both genders are similarly represented in terms of humanities and languages, important for progression to A-level generally and more specifically to the kind of subjects that students can follow up on at A-level (Jin et al. 2011).

Table 2.2 Top 10 subjects at A2 level chosen by male and female students completing the survey

Subject	% of Male Students completing the survey	Subject	% of Female Students completing the survey
Mathematics	36.0	Psychology	27.7
Business Studies	22.6	Biology	24.1
Physics	20.6	History	21.2
Chemistry	19.8	Mathematics	19.5
Biology	19.5	Chemistry	18.3
History	19.4	Art & Design	17.3
Geography	15.8	English Lit	17.3
Psychology	14.2	English Lang	13.1
ICT	13.3	Business Studies	13.1
Media Studies/ PE Sport	11.0/11.0	Geography/ Sociology	12.2/12.2

Source: Cambridge Assessment fact sheet (2007b) based on Vidal Rodeiro (2007)

In 2006 Cambridge Assessment undertook a survey of the choices made by 4,125 AS level students and 2,472 A2 level students to understand what subjects they chose to take as well as how they were making their decisions. The study found that AS/A level student preferences were aligned with gendered stereotypes regarding subjects with boys more likely to take "practical subjects" such as Mathematics and Computing and three times more likely to take Physics. Girls were twice as likely to take English related subjects, Psychology, Sociology and Art and Design (Vidal Rodeiro 2007) Both girls and boys have a high uptake of Math, Biology, Psychology, History, Chemistry, Business Studies and Geography, but the proportion of male and female students taking particular subjects is notable. The most common subject for boys was Math, followed by Business Studies and Physics while the most common for girls included Psychology, Biology and History. (Table 2.2). Additionally 20.6% of boys studied Physics, 13.3% ICT and 11.0% PE/media studies, while 17.3% of girls studied Art & Design, 17.3% English Literature and 13.1% the English language. Biology and

chemistry made it into both gender's most common subjects but physics was only present for boys. In this sense, the impression is that girls are present in STEM subjects at AS level but that they are leaning more towards science subjects that are important for medical careers. However further analysis was conducted on this sample, using standard logistic regression, found that the odds of males taking up two or more science/ math subjects were 2.7 higher than the odds of females doing so (Vidal Rodeiro 2007).

There has been increasing concern about the lack of female participation in science, technology, engineering and math (STEM) related occupations; this is partly explained by their field of study at university level. Although women generally outperform men in testing in most subjects at second and A-level, with the exception being math (Vidal Rodeiro 2007), they still are concentrated in fields that are typically female-dominated. In addition, women and men are separated by institution type at third level. Women have seen a spectacular growth in higher-level attendance. However newer institutions expanded more rapidly; for example, the number of part-time female students at polytechnic or colleges of higher education (which in 1992 became universities) rose by 758 per cent between 1970 and 1990, and the number of Open University female undergraduates went up by 740 per cent in the same two decades (Wakeling 2009). This means that female participation gains were to a large extent concentrated in less traditionally prestigious institutions. By 1986, 51.8 per cent of tertiary students were female, with Oxford and Cambridge lagging behind; approximately 30% of the student body were female (Halsey 2000). Kilpi and Chan (2010) observed that while there was relative gender parity at the secondary level until the late 198's, followed by a widening gap in favour of girls (coinciding with a change in curriculum in favour of more academic subjects), the pattern in universities has been one of more gradual change over a longer period of time.

EFFECTIVELY MAINTAINED INEQUALITY AT TERTIARY LEVEL, THE ROLE OF INSTITUTIONAL DIFFERENTIATION AND INSTITUTIONAL PRESTIGE

Tertiary level is highly differentiated and has also gone through several reforms during the latter half of the 20th century. In the mid-1960s, the introduction of a binary system of higher-level education in the UK created the polytechnics, which restructured higher education to include vocational training. By providing a vocational alternative to traditional universities, and allowing for part-time study, higher education became available on a mass scale resulting in increased participation (Kyvik 2004). Competitiveness between the two systems led to polytechnics imitating the institutional and academic structures of the traditional universities

and this, combined with the stronger vocational orientation of traditional universities, resulted in the Further and Higher Education Act of 1992 (Eurydice 2003). Polytechnics were upgraded to university status, meaning that the UK moved to having a "diversified system"[21] of higher education combining both traditional university subjects and vocational training. However, as a result, most of the polytechnics found themselves at the bottom of the University League tables; thus the diversification of university degrees further de-standardised higher education (Schmelzer 2008). Moreover, it was argued that even though the replacement of the binary divide at third level was in theory "an equalizing or 'comprehensive' strategy"; in practice, a hierarchy of prestige remained (Cheung and Egerton 2007, p. 199). This has important consequences for qualitative inequality as adult learners and individuals from lower socio-economic backgrounds tend to concentrate in the polytechnics.

Generally speaking and in terms of prestige, university level education is dominated by the traditional Universities of Oxbridge. In addition to these two old universities, 16 others make up what is known as the Russell Group of Universities founded in 1994. These universities are considered the most prestigious ones in the UK and include Birmingham, Bristol, Edinburgh, Glasgow, Imperial College London, Leeds, Liverpool, London School of Economics, Manchester, Newcastle, Nottingham, Sheffield, Southampton, University College London, Warwick and more recently Cardiff, which joined in 1998. However entrance to Russell Group universities is not just a matter of prestige, it is also a matter of class. Boliver (2011) notes that there is a strong social class gradient in participation rates in different types of HEI with the less advantaged and ethnic minorities concentrated in New Higher Education Institutions HEIs. Wakeling and Savage (2015) using the Great British Class Survey have found strong evidence that the university attended affects outcomes and promotes clear stratification, even within the Russell Group itself. Among Russell Group graduates, attending Oxford, Cambridge or LSE is strongly linked to entry into NS-SEC1 even when other factors are considered. Differences by subject studied are less notable than institutional differences (although graduates from business and management, medical and – to a lesser extent – the social sciences have something of an advantage). Nevertheless, the variation in outcomes among RG graduates based on institutional prestige highlights the fact that expansion will not be entirely effective in tackling inequality while students from lower socio-economic backgrounds are less able to access institutions with historic prestige (Wakeling and Savage

21. Consisting of a mix of institutions that can be ranked or considered stratified in terms of prestige and/or resources etc. (see Aru, Gamoran and Shavit 2007, p. 5 for a fuller description of the differences between modes of differentiation in education systems)

2015). Figure 2.7 illustrates that individuals from highly educated backgrounds are more likely to enter Russell Group universities while those from lower educated backgrounds are more likely to enter other HEIs.

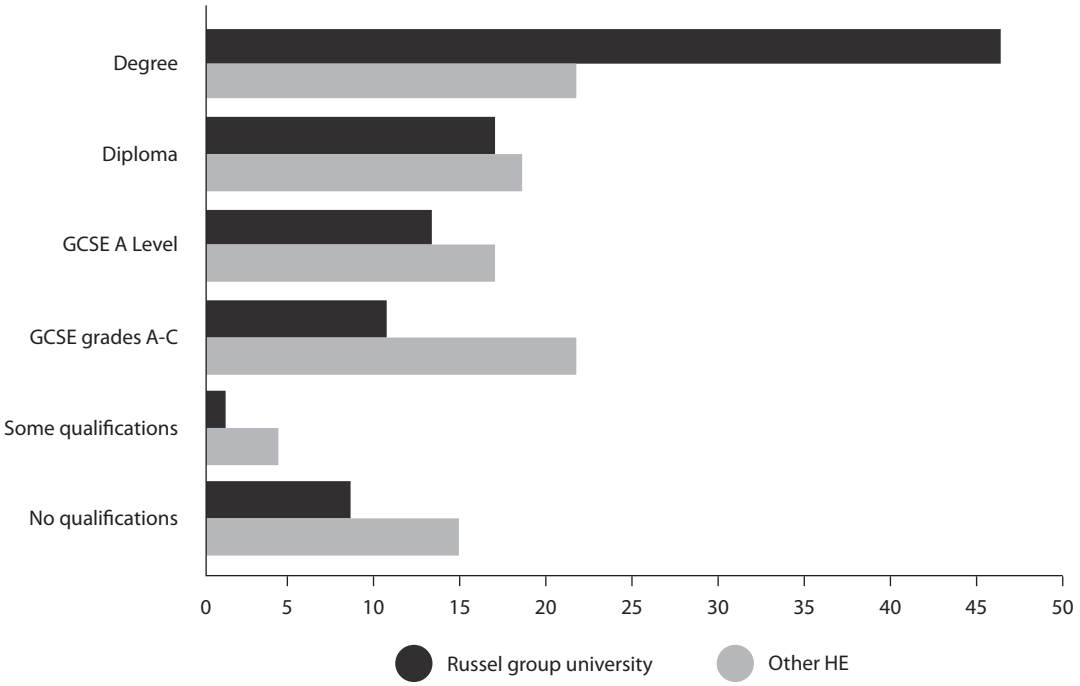

Figure 2.7 Russell group attendance based on parental level of education

Source: own calculations based on the LSYPE

PARTICIPATION IN FORMAL AND NON-FORMAL ADULT LEARNING IN THE UK

While standardisation of the educational system was somewhat successful at the primary and secondary level with the introduction of a National Curriculum, the standardisation of vocational training proved difficult to achieve, with the result that vocational qualifications are the subject of on-going reform. "By the late 1980s, there existed about 6000 different pre-vocational and vocational qualifications awarded by different qualifying bodies competing in overlapping occupational areas" (Brauns & Steinmann 1997, p.15). Efforts at increasing standardisation in the UK education system include the development of a centralised National Qualifications Framework (NQF) through which all types of qualification, including those which took place during compulsory level schooling, can be approved and classified. It is this classification that forms the basis of the definition of formal adult education in this thesis[22].

22. See the research design section for more details.

Most formal adult education takes place in colleges of further education (FE), in universities providing higher education (HE) or on-the-job through accredited courses linked to the National Qualification Framework (Eurydice 2003). The emphasis in FE is on skills and vocational qualifications, while the higher education system includes non-university HEIs such as colleges of higher education and university colleges (Eurydice 2003). Work- based training in the labour force is most often organised and paid for by the employer, while the Open University is a major provider of higher education courses through distance learning (Eurydice 2003). Many further educational institutions have for some time offered a wide range of academic as well as vocational courses for young people.

Formal education (as defined in the labour force survey LSF) is normally provided in the formal diploma-based educational system (Boateng 2009). Non-formal education and training is normally job-related but can include courses undertaken for personal reasons and is not necessarily certified. This also includes guided on-the-job training. Non-formal education and training primarily consists of short courses for all age groups which are taken either within educational institutions or externally (Boateng 2009).

The "New Deal" policies of the 1990s and early 2000s aimed to encourage market-led provision of training and adult education as well as providing incentives for both young people and older adults to participate in training. Therefore, while participation in adult education and learning is likely to be a relatively individualised decision, it is also dependent on labour market status and on the opportunities employers offer. There is a significant level of state intervention in the market, although most of it is indirect through incentives for employers and the protection of employees' rights to adult education.

Typically, the UK has high levels of participation in adult learning, including formal education and non-formal education and training. Female participation is higher than male participation for all countries. Only the Nordic countries have a higher rate of participation for women than the UK with Norway overtaking the UK in 2011 (Table 2.3). Male participation in both formal (approximately 4.4%) and non-formal training (approximately 11-14%) in the UK is lower than female participation which hovers around 6.5% for formal and 20% (until 2010) for non-formal training. In 2011 participation rates fell from 22% to 17.5% for women and from 15.6% to 13.2% for men. One of the main drivers of a decline in participation rates in 2011 was the approximately 5% drop of female participation in non-formal training.

Table 2.3 Participation in education and training in the UK

TIME	2007	2008	2009	2010	2011
Formal education and training (females)	6.7	6.7	6.9	6.7	6.3
Formal education and training (males)	4.0	4.2	4.4	4.4	4.1
Non-formal education and training (females)	20.9	20.8	20.9	20.0	14.9
Non-formal education and training (males)	14.3	14.2	14.2	13.7	11.3

Source: Eurostat Adult Learning Survey

Note: Females aged 24-64, males aged 24-69

Educational expansion and the energetic reorganisations of the further education system, as well as increasing private provision, has enlarged the number of courses available. Formal adult education involves a longer time commitment than its non-formal counterpart, with the typical duration of courses ranging from one to three years. Therefore it can be expected that individuals who are in better employment positions may not have the incentive or time to devote to formal adult education. While access programs have been implemented, entry criteria have become more flexible and part-time or distance learning has been made more available in the UK, socio-economic barriers to participation for disadvantaged groups persist. In addition, gender influences the likelihood of adult education participation. It is expected that interrupted career patterns for women may mean that women are less likely to receive non-formal, internal adult education in the workplace. Moreover, they may use formal adult education as a stepping stone to re-enter the labour market. It would also be reasonable to assume that the longer the duration of the employment interruption, the more difficult re-entry could be, without some way of signalling to employers that their skills are up-to-date.

However, as employment protection is low and general education more comprehensive, employers are more able to take risks with regard to hiring personnel either on a part-time or full-time basis. The "breadwinner" model is also likely to mean that the opportunity costs of formal education are higher for men than for women (Dieckhoff & Steiber 2011). In short, the high participation rates in the UK can be explained as the result of a combination of supply-side and demand-side pressures that compel both individuals and employers to invest in adult education in order to increase productivity levels and remain competitive in the labour market.

In summary Figure 2.8 provides a simplified overview of the key stages and examinations that individuals pass through in compulsory education and the options available

to them at the post-compulsory phase. It also provides a typical age for each stage on the right-hand side. The dividing line between the two phases are GCSE examinations that take place at age 16. A more traditional academic pathway continues from GCSE level to A-level, to a university degree. A more vocational path can start before the age of 16 if students opt into Vocational GCSEs, NVQs etc., or labour market entry. Students can continue to progress through vocational training gaining higher NVQ qualifications which will allow them to re-enter academic pathways either as part of a longer route through initial education or they can return later in life through adult education. Where they are considered as adult learners for a first degree or diploma at the age of 24 and above in this study as this allows them time to have delayed transitions or gap years in between education levels.

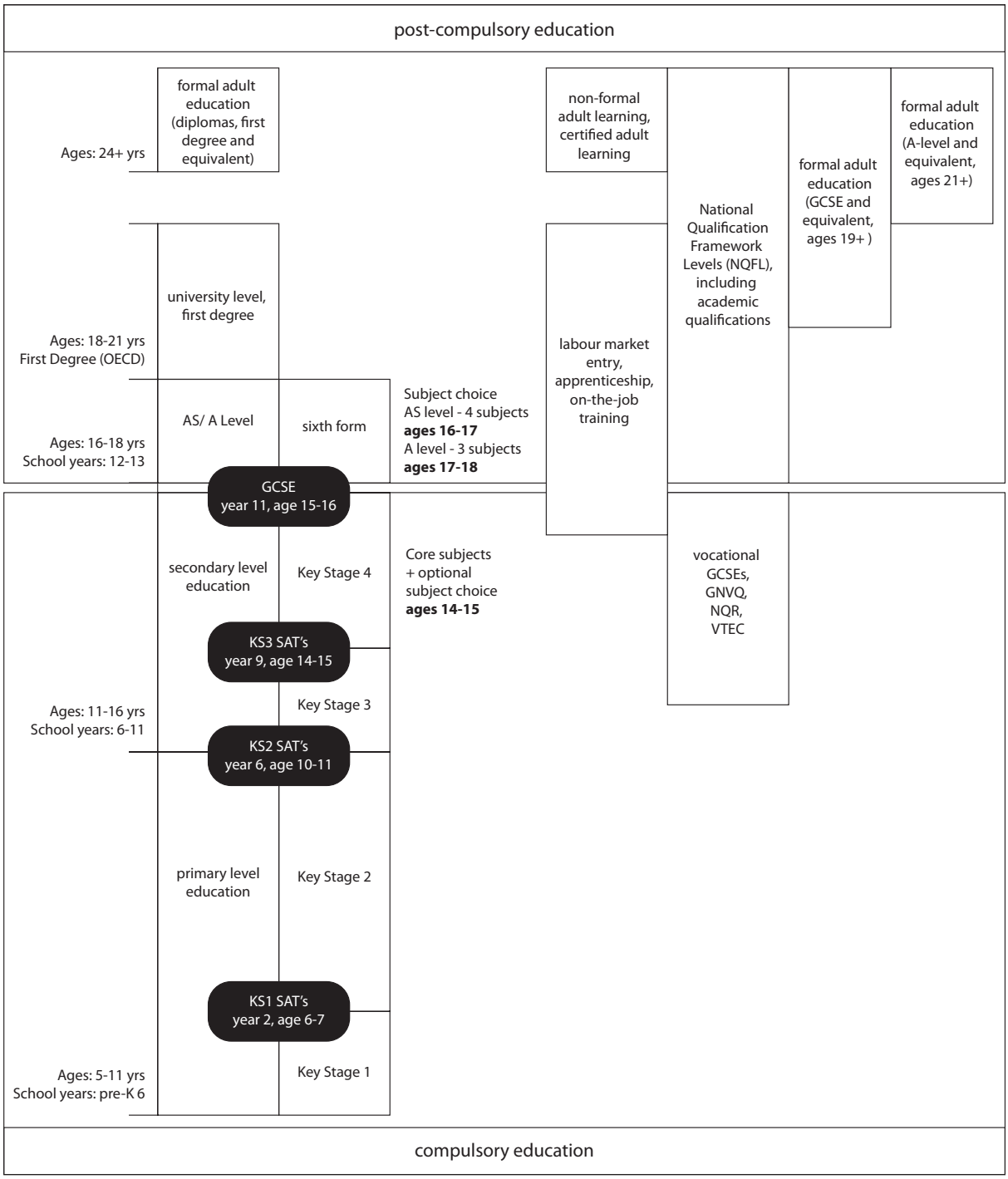

Figure 2.8 Overview of the UK's education system: Key stages and examinations in compulsory and post compulsory education in the UK

Source: Own diagram

CONCLUSION: HORIZONTAL DIFFERENCIATION, EDUCATIONAL PATHWAYS AND CHOICE IN THE UK

Kerckhoff (2001) argues that the UK is more standardised than the US because it has more concrete credentials and clear linkages between educational qualifications and the labour market that do not exist across the Atlantic. However, comprehensivisation undertaken in the 1960s and 1970s in the UK was never fully completed (as LEAs could opt out if they wished and private schools were not integrated), leaving parts of the older tripartite system intact. Standardisation was more successful in compulsory schooling but less so at the tertiary level, with the result that the signalling of credentials still remains unclear at later stages of the education system.

One of the results of the historical development of education in the United Kingdom is that the system has become significantly entangled. Movement between different types of education is quite flexible and the distinction between the post-compulsory courses offered in either schools or further education colleges is increasingly unclear (Eurydice 2003). Low levels of institutional sorting mean that students can access a further education course relatively easily and can theoretically progress through higher level institutions to university level; however access to more elite universities and professional courses still remains subject to qualification and subject barriers.

One of the main ways that structural effects are demonstrated to have an effect is through the relationship between advantaged or disadvantaged structural locations and the attainment of otherwise similar students. Using the NCDS, the structural locations examined in Kerckhoff's work are created by different types of secondary schools (elite, comprehensive, and secondary modern) and by ability grouping patterns in the various school types. This is linked to later positions in upper secondary school where different groups diverge from one another. Similarly it is possible to distinguish between horizontal and vertical segregation both between and within schools after liberalisation. They are vertically stratified (ranked) through league tables, and while technically school type could be understood as horizontal differentiation, unofficial vertical ranking between school types also exists.

Within schools, both vertical (hierarchical) and horizontal (non-hierarchical) differentiation is manifested through the sorting of students by ability and by curriculum. Ayalon (2006), studying Israeli students, identifies three forms of curriculum differentiation:

level, formal, and subject. Level differentiation is by definition hierarchical: for example, advanced courses are more appreciated than basic courses (Gamoran 1997; Lucas 1999). Formal tracking is understood as classical curriculum tracking, in which students study in either academic or non-academic (often vocational) programs, while the third type, subject differentiation, is less studied. Van de Werfhorst et al. (2003) argue that students' choice of subject must be considered within the context of both economic and cultural stratification because they tend to select subjects related to their parents' positions in both the economic and the cultural hierarchy.

Parental expectations and student aspirations affect what optional subjects students choose to study. While the choice of school is mainly a parental decision, the influence parents have on choice of subject may differ by educational background (this will be explored in more detail in Chapter 3). Figure 2.9 outlines the different influences affecting student choice at age 14 as the foundation of "self-selected" subject choice, as well as the consequences of taking mostly academic or vocational subjects for GCSEs. It also highlights both the primary and secondary effects of social background on educational attainment as performance influences student choices, which in turn influences GCSE performance. School quality and school type also mediate the relationship between non-hierarchical curriculum differentiation (resulting in tiering, setting and ability sorting), influencing both self-selected subject choice and GCSE performance. GCSE performance and whether or not a student choose mainly vocational or mainly academic subjects can then determine which way students go regarding labour market entry, A-levels or some combination of both.

Overall it is not enough to examine only vertical differences; it is also important to take into account the institutional differences that define educational pathways. These include differences both within schools and between schools; e.g. whether or not schools are publicly or privately funded, have more or less autonomy in organising their internal affairs, sort students by curriculum or are of high or low quality. In addition, it is important to follow the historical development of institutions as this can largely determine the opportunity structure within them, a combination of educational expansion and the rise of the service sector greatly altered the career opportunities of women.

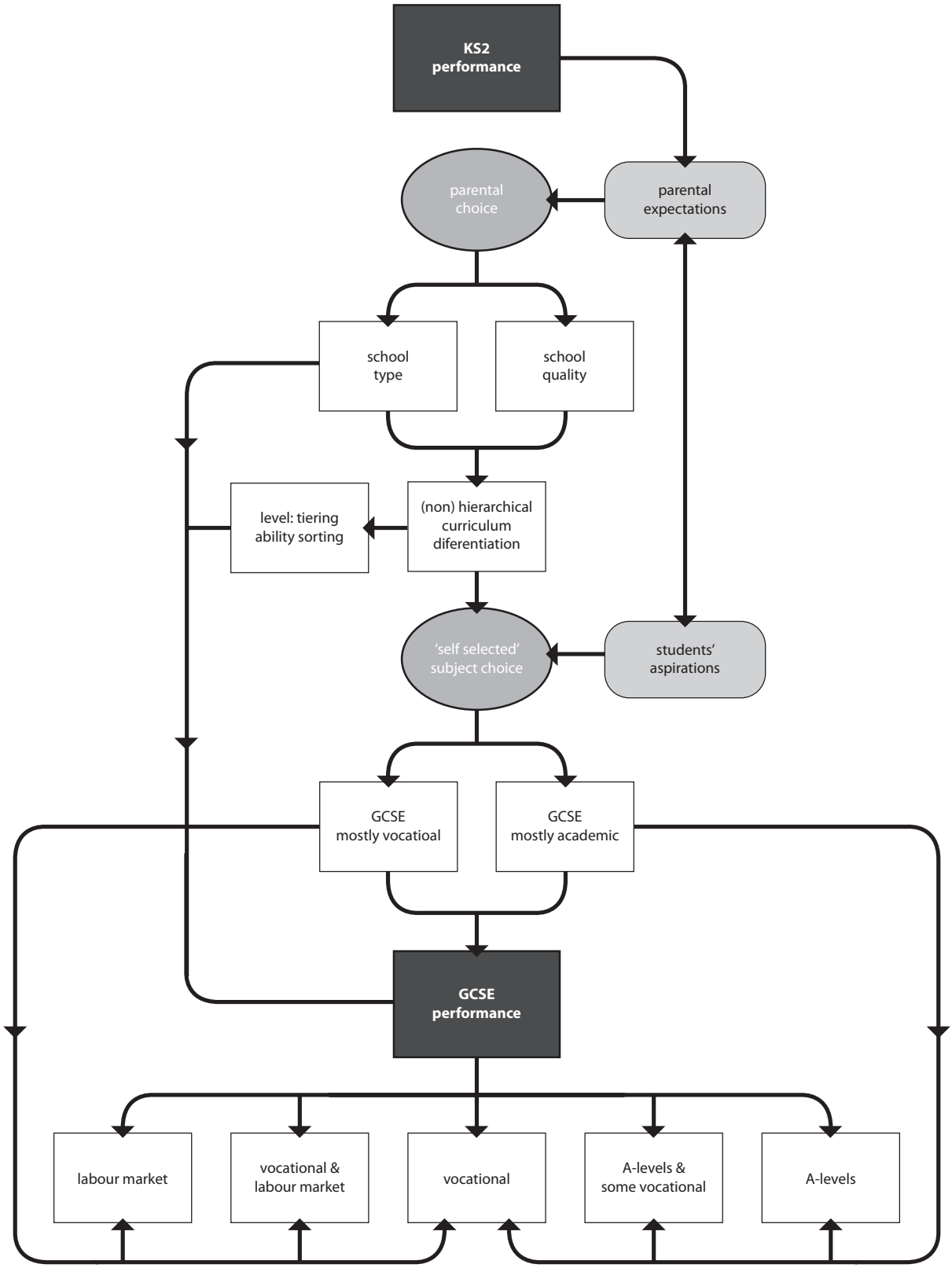

Figure 2.9 Influences on parental and student decisions at secondary level and possible post compulsory outcomes (arrows represent direction of the relationship)

Source: Own diagram

Educational pathways have direct consequences for students' opportunities later in their careers. While there has been some move towards standardisation at the lower secondary level, this has been mitigated by marketisation, flexibility and increasing differentiation, especially at the post-compulsory stage. In short, educational inequalities in the UK system can be found to be effectively maintained through horizontal dimensions and to ignore this element is to overestimate the equalizing power of the comprehensive system. Institutional differentiation, transition points and subject choice work together to form educational pathways whereby students with similar levels of ability but different socio-economic backgrounds can separate into different trajectories.

CHAPTER 3: DIFFERENTIATION IN SECONDARY EDUCATION AND INEQUALITY OF EDUCATIONAL OPPORTUNITIES IN ENGLAND

INTRODUCTION

In the 1970s the UK shifted away from a "tracked" education system to a comprehensive one (Kerckhoff 1990), in theory reducing educational inequalities by removing barriers to attending "grammar" schools for students of all abilities. However the decentralised nature of education in England, as well as a large fee paying private sector, resulted in the English comprehensive system retaining elements of the earlier tracked system. Currently, students are distributed between all-inclusive state-financed schools, of various types and quality, and academically selective, privately-financed "independent" schools. Within schools, students still choose what optional subjects they wish to study for GCSE exams. Different schools offer different subjects, with some specialising in more traditional academic subjects and others embracing vocational options.

Many previous studies have looked at the role of attending a selective or a comprehensive school in the social reproduction of inequalities, particularly when the United Kingdom was transitioning to a comprehensive system, but fewer studies have examined the impact of class background on subject choice (Van De Werfhorst et al. 2003; Jin et al. 2011) or the link between school type and curricular differentiation in promoting social mobility (Iannelli 2013). In particular, less is known about the influence of school quality and institutional differentiation within the public sector on student choices for the General Certificate of Education (GCSE) or for later educational pathways.

The following chapter discusses the changes in the English comprehensive system over the last quarter of the 20th century as well as the influence of school and curricula differentiation on educational outcomes, social mobility, and educational transitions. The Longitudinal Study of Young People in England (LSYPE) is used to investigate how social origin and institutional differentiation (in terms of quality and type of school) influences optional subject choice at age 14. This chapter takes into account the influence of prior performance and examines the impact of these decisions on young people's GCSE exam results and on further educational pathways.

CHANGES TO THE ENGLISH COMPREHENSIVE SYSTEM FROM 1965 -2002

The comprehensive system was introduced into England in 1965 and phased in during the 1970s[23] partially to overcome dissatisfaction with inequalities in the sorting process faced by a "tracked" system. While initially the tripartite system was thought to be more meritocratic[24] than the previous institutional structure (as some working class students were able to access prestigious grammar schools) it was hoped that by ending "formal tracking" in terms of ability, class bias in the sorting of students into schools would be reduced. However, the decentralised nature of the education system of the time meant that not all Local Educational Authorities (LEAs) implemented the changes. Also the private sector, which expanded in 1944 partially as a response to the 11-plus examination barrier to grammar schools, remained intact.

Privately funded schools (including "public" schools) are officially labelled "independent schools", while government funded schools include both "maintained schools" (which opted out of LEA control) and LEA controlled schools. Grant-maintained status was abolished by the School Standards and Framework Act 1998. Within the state funded system students are distributed between community, foundational, voluntary-aided, voluntary-controlled and City Technology College (CTC) schools. This means that there is still large variation in the type of school that students can attend within the comprehensive system.

During the liberalizing period of the 1980s concern with principles such as freedom of choice and competition led to the 1988 Education Reform Act. This Act gave parents the theoretical right to choose their child's schools (Dearden & Vignoles 2011), gave schools the right to "opt out" of their LEA (Halsey 2000), and compelled schools to produce "performance tables" (more commonly known as "league tables") in the hope that creating greater competition between schools would raise school standards[25] (Dearden & Vignoles 2011).

23. The introduction of comprehensive education was not a uniform process and there was great diversity, both in the ways the Local Education Authorities (LEAs) changed their educational systems and in the organisation of individual schools within many LEAs (see: Kerckhoff et al. 1996).
24. The tripartite system was introduced in 1944 alongside universal education. Between 1944 and the 1970s this system sorted pupils between academic grammar schools and vocational secondary modern and technical schools by means of the 11-plus examination.
25. The tripartite system was introduced in 1944 alongside universal education. Between 1944 and the 1970s this system sorted pupils between academic grammar schools and vocational secondary modern and technical schools by means of the 11-plus examination.

Also in an effort to standardise what children were being taught, a national curriculum was introduced in this period. All state supported schools had to provide core subjects such as math and English to their students. Private schools did not have to implement the curriculum but were made subject to regular inspections (Eurydice 2003). Generally, schools were left with a substantial degree of latitude regarding both the qualifications and optional subjects they could offer meaning that schools influence the type of subjects students choose. Students were not limited with regard to the number of optional subjects that they can take.

In the 1990s and 2000s, additional changes were made to the English education system that influenced the progression opportunities of students, particularly for those taking non-academic subjects. A wide range of vocational qualifications[26] for ages 16-18 became available in secondary level schools. GCSEs in vocational subjects were also introduced into secondary schools in September 2002 (Eurydice 2003). As a result, the line between what is studied in schools and what is studied in colleges of further education has become increasingly blurred (Eurydice 2003) and post-compulsory educational pathways have become increasingly complex.

DIFFERENCES BETWEEN SCHOOLS, EDUCATIONAL OUTCOMES AND SOCIAL MOBILITY IN ENGLAND

The overlap between the tripartite system and the gradual introduction of the comprehensive system, along with the availability of the information-rich National Child Development Study (NCDS) has proved valuable for understanding the role of school type in educational outcomes. Sullivan and Heath (2002), controlling for school intake, student characteristics and prior performance, found a positive effect to attending a government funded school or private grammar school on NCDS participants' performance (age 16) and on their exam results. However, Boliver and Swift (2011) found no increased effect on upward mobility for students from low socio-economic-status (SES) families who attended grammar schools compared to their peers with the same characteristics attending comprehensive schools, after controlling for selection.

Using the LSYPE, Ermisch and Del Bono (2012), found that there is a steep gradient in children's achievement during adolescence with respect to parents' highest level of education, related to the sorting of children into schools of different quality. Also within schools of a given level of quality there remains a substantial slope in children's achievement

26. Students can study for Business Technology Education Council (BTEC) as well as other vocational qualifications such as National Vocational qualifications (NVQs, formally GNVQs) until the age of 18.

with respect to parents' education. In other words, children of more educated parents are sent to better quality schools and within schools they do better.

Dearden et al. (2011) look at whether or not the exam scores of children of different prior ability levels are influenced by how effective a school is. They argue that differential effectiveness might occur partly due to schools' strategic responses to performance tables (i.e. students near a threshold are more likely to be invested in than students with little chance of influencing the school score),and partly as a result of student groupings (mixed ability classes may focus on the average student). They combine different measures of GCSE performance for pupils who achieved different results in their Key Stage 2 (KS2) exams (at the end of primary school) and examine whether the group averages vary. Overall they find that about one quarter of schools are "differentially effective"; they vary with regard to the outcomes for students of different abilities.

CURRICULAR DIFFERENTIATION: THE ROLE OF SUBJECT CHOICE IN EQUALITY OF OPPORTUNITY

Van De Werfhorst et al. (2003), using the NCDS, find that children from a higher social background in Britain achieve a higher standard in both humanities and scientific subjects in primary and secondary school, and are more likely to choose medicine and law at third level, independent of ability. In addition they found that both absolute and relative levels of ability were relevant to the choice of subject at degree level, as people chose subjects that they were relatively good at compared to other subjects. Jin et al. (2011) using the LSYPE found a large gap in the likelihood of studying triple science, the courses making up the English Baccalaureate (EBacc) and A-levels between children from richer and poorer families, however this gap largely disappears when prior attainment and other factors (including school type) are controlled for.

A similar story emerges when looking at the role of parental education. Children whose parents have a degree are more likely to study English Baccalaureate subjects but this is reduced when controlling for school level characteristics and insignificant when prior achievement is included. Having parents with degrees or equivalent is associated with children taking no vocational courses at all after controlling for individual and family characteristics only. The strength of the association is reduced when controlling for prior attainment and school type (Jin et al. 2011).

Iannelli (2013), using the NCDS, found that children from advantaged backgrounds benefit the most from curriculum differentiation because they tend to choose subjects that are

"highly valued" on the labour market (Mathematics, English and Science). The likelihood of entering a service class position is reduced if students studied technical (statistically significant), domestic, and arts subjects. Generally type of school did little to explain social class differences in entry to the service class at age 33, and explains more of the effect of parental education (16% of the advantage transmitted was linked to school type). A much larger part of the effect of social class and, in particular, of parental education can be explained by the combined effect of school types and curriculum (33%).

SCHOOL TYPE, ABILITYAND CURRICULUM IN EDUCATIONAL TRANSITIONS

Overall, different schools provide different routes to qualification, with certification the main form of stratification after students finish compulsory education (Heath and Cheung 1997). In 2011, the Russell group of universities provided guidelines on how they view different qualifications; Applied A Levels, BTEC Nationals and OCR Nationals and certain so-called "soft" GCSE subjects were deemed unsuitable (Jin et al. 2011). Parents with no direct experience of higher levels of education may not be aware of these criteria with the result that they are less able to inform their children regarding the outcome of certain choices. The children of lower educated parents must therefore rely heavily on schools for information.

Although performance tables were established to provide information about school quality to parents, those from lower socio-economic backgrounds face greater financial and informational constraints in school choice (Allen et al. 2010) and are possibly less able to move schools and neighbourhoods if their local school is underperforming. If a school is of low quality and does not offer many options for academic study, a student whose parents have lower levels of education may be doubly disadvantaged in terms of maximizing their chances of entry into more prestigious subjects and following from that, "better" upper secondary or third-level courses.

Jackson (2013), examining the role of social background inequalities in attainment over time, finds that social background (whether operationalised by class or education) plays an important role in the transition to A-level at age 16[27]. In the context of an overall increase in educational transitions to A-level, students from more advantaged backgrounds are more likely to stay in academic education. Crawford et al. (2011) came to a similar conclusion with LSYPE data, socio-economically advantaged pupils were more likely to pursue full-time

27. She uses three British datasets to capture different birth cohorts: The National Child Development Study (NCDS), the British Cohort Study(BCS) and the Youth Cohort Study(YCS).

education options, such as A/AS levels, at both 17/18 and 18/19 than to take other transitions such as entering the labour market directly or a combination of education and training. Goldthorpe and Bukodi (2013) found that the those born in 1958 of the professional and managerial classes have, at the average level of cognitive ability and prior performance, the highest probability of continuing to A-levels (well over a 20% probability for the former and 30% for the latter, compared to 10% and 20% respectively for children from intermediate, small employers and lower supervisory backgrounds). Those from the semi-routine/routine classes have the least probability of continuation to A-level using either measure[28].

GENDER DIFFERENCES IN EARLY SUBJECT CHOICE AND GENDERED EDUCATIONAL PATHWAYS

It is well known that girls are making big strides in education, but women are still under-represented in science, technology, engineering and math (STEM) careers and in third-level academia (OECD 2012). Earliest subject choice in the UK happens at age 14 when students choose their optional GCSEs. According to Imdorf et al. (2014), younger individuals are more likely to choose educational pathways that match their gender identity. Generally speaking the advantages and disadvantages of early choices accumulate over time as the number and type of subject can influence the number of future educational routes students can take and this has important consequences for the sorting of young men and women into categorically different fields of study.

Jin et al. (2011) using the LSYPE find strong gender differences in young people's subject and course choices at age 14 in England. They argue that "from the perspective of behavioural economics, social norms could be considered anchoring points, against which individuals evaluate their options and make decisions" (Jin et al. 2011 p. 48). When young people do not have a strong preference for one course over another they may take the one that is stereotypical for their gender or social class. However student choices are also constrained by school level factors such as timetabling (with gendered subjects often timetabled against one another) and therefore it is important to adequately control for schools.

In the LSYPE, boys tended to prefer subjects that seemed relatively scientific or physical in nature; physical education, design and technology, ICT, science and, to a lesser extent, maths. In comparison, girls reported artistic and language based subjects such as art,

28. For the 1970's cohort but the distribution shifts to the right, reflecting the trend over time for children of all abilities to take A-levels.

drama, English and to a lesser extent music as their preferred subjects. Also these differences in views of particular subjects in Year 9 do seem to translate into diverging pathways between the genders at Key Stages 4 and 5 with girls more likely to study A-levels in Year 13 conditional on personal and family characteristics. However this is reduced when controlling for school characteristics and becomes insignificant when controlling for prior attainment and wider factors (Jin et al. 2011).

RESEARCH QUESTIONS

In sum, the combination of differentiation between school type, the ability of parents to choose their child's school, curriculum differences between schools, and the complexity of later education, means that even though children are not in theory sorted in the English comprehensive system, students can take different routes through education. English students make their first choices for their school career in Year 10, at age 14. The decisions about the schools are made even before children enter secondary education. Core subjects including math and English are compulsory and taken by most students, but students are not limited with regard to the number of optional subjects that they take. It is not until students are aged 16 that their choices become limiting for their further educational career, although early choice of optional subjects may play a role in their future orientation and decisions. We expect that the children of lower educated parents will be found more often in less prestigious courses and alternative educational pathways and that they will be less likely to leave these pathways once they enter than the children of parents with higher educational resources. This chapter addresses the following research questions:

1. Is there a link between student social background and early subject choice at the age of 14 (net of previous educational performance)?
2. What is the association between student social background, early subject choice and entry into A-levels at age 16?
3. How do social background differences interact with gender?

SAMPLE, VARIABLES AND METHODS

Data from a cohort of 15,000 students from 600 schools in the Longitudinal study of Young People in England (LSYPE), who entered lower secondary education in 2004 and were

followed up for seven consecutive years until the students were aged 19/20, is used for this chapter. The LSYPE was designed and financed by the Department for Education UK to cover policy-relevant topics such as education, employment and family life of youth in England. The first four waves contain information from both parents and students while only young persons were interviewed from wave 5 onwards. Thanks to a relatively high response rate, the LSYPE offers rich information on demographic variables followed by a detailed description of the student school careers, their choices, plans and aspirations.

The dataset has also been supplemented by linkage to the 2006 school performance tables and to longitudinal administrative records such as the National Pupil Database (NPD) which contains Standard Assessment Test scores (SATs) at the end of Key Stage (KS) 2 (age 7-11), KS3 (age 11-14) and GCSE results at the end of KS4 (age 14-16). The NPD covers statefinanced schools and selected private schools that adhere to the system of public examinations. The database also provides information on school size, quality and composition. The performance tables show an independent school ranking which contain "value added" scores measuring the average gain in test score achievement for pupils in schools with respect to their expected achievement. The NPD covers state financed schools and selected private schools that adhere to the system of public examinations. The database also provides information on school size, quality and composition.

The final sample relies on four waves and consists of 7,567 observations in the models predicting students' share of optional subjects, 3,938 women and 3,964 men in the models separated by gender and 7,426 in the models describing entry into A-levels. Publicly funded schools were selected, the observation from the boost sample in the wave four was eliminated, and all the missing values on the selected variables were excluded for the analyses. The independent variables of interest come from wave 1, and some, relevant for the second part of the analyses, from wave 3.

The first dependent measure is the share of optional vocational and technical subjects, and the share of optional humanities and language subjects that students take in year 10. The shares of optional vocational and humanities subjects are expressed as a percentage of all optional subjects taken by a student. Consequently they should be interpreted in range from 0-100. The share of optional vocational courses also appears in the analyses as a categorical variable consisting of five groups, each representing 20 per cent of the range of the continuous variable.

A second group of dependent variables show students' achievement and their chosen pathways after the GCSE examination. The first measure captures academic performance

through achieved A*-C thresholds in GCSE math at the end of Key Stage 4. It is a dummy variable that takes the value of one if the respondent reaches the threshold and zero otherwise. The second measure is a categorical variable that differentiates between entry into academic A/AS/Applied A-level, vocational track, and being out of education.

The focal explanatory variable in all models is the highest education levels between parents, taken from the first wave. Five hierarchically ordered groups were created according to education: degree, lower tertiary, A-level, GCSE grades A-C and Qualifications Level 1 and below. The second set of the models looks at whether the share of vocational subjects a student takes in KS3 can influence their subsequent educational decisions. In the final year of primary school children sit their KS2 SATs in mathematics and English. The Averaged Math and English point score is taken as a proxy for students' prior achievement. Finally, at the school level school quality is approximated through KS2-KS3 valued added scores, and school forms and compositions are considered. KS2-KS3 value added measures the average gain in test score achievement for pupils from KS2 to KS 3.

School forms are captured by four dummy variables; Community school, Foundation school, Voluntary-Aided/Controlled school and City Tech Colleges. Independent schools are excluded from the sample as they lacked information on school performance scores. A variable measuring whether or not schools are gendered (either a boys only or a girls only school) or mixed is included. The percentage of students whose first language is English is a school compositional measure.

The analyses includes a series of demographic and family controls such as gender, parents' marital status and ethnic groups. The "main parent", either biological/ non-biological, living with the student is asked whether he/she is single, living with spouse or partner or separated, divorced or widowed. Three dummy variables are included to measure ethnicity including the White, Asian, Black and other/mixed. In addition, variables directly influencing student achievement such as total number of optional subjects, and parental view of the likelihood that the student will continue into higher education are controlled for.

RESULTS

Social background, gender and optional subject choice

Table 3.1 presents primary and secondary (net of achievement) effects of parents' highest education on students' share of optional subjects. The first model shows that high parental

education is positively associated with the share of optional humanities and languages, and negatively associated with the share of vocational courses. The strong association is confirmed also when prior performance is included in the model: Having a parent with a degree increases the share of optional humanities by 6.04% and decreases the share of vocational subjects by 8.39%. The addition of a rich array of demographic covariates in the following model does not change the direction of the results observed in the first two models.

Also, the possibility that the influence of parental education on subject choice is performed through the choice of a "good" school -one with the right organisation, curriculum and of a high enough standard to influence students' choices is addressed. Further information on school types, and gender composition, along with the quality measure obtained through school performance tables were included. The results suggest that better performing schools favour the choice of humanities, and discourage the choice of vocational subjects. Some school forms such as Voluntary Aided schools increase the students' share of optional humanities. More generally, better performing students favour humanities and science and steer away from vocational subjects. While finally, whether or not parents expect their children to attend higher education has a negative association with the choice of humanities and a large positive association with the choice of vocational subjects (7.11%). Overall the models seem to suggest that parental influence on choice dominates school influence. Running fixed effects models to control for any remaining bias from the schools It is found that there is a slight reduction in the coefficients but the effect remains largely unchanged (McMullin & Kulic forthcoming).

Table 3.1 OLS regression of primary and secondary effects of parents' highest education on students' share of optional subjects: full model

	Humanities and Languages				Vocational subjects			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Parents' highest education (Ref: Some or None Qualification)								
Degree	11.86***	6.04***	4.75***	3.98***	-15.62***	-8.39***	-6.97***	-5.58***
	(1.02)	(1.04)	(1.08)	(1.03)	(1.03)	(1.01)	(1.02)	(1.03)
HE below degree	7.07***	3.24***	2.59***	2.10**	-8.79***	-4.03***	-3.38***	-2.65***
	(0.97)	(0.96)	(1.00)	(0.97)	(1.05)	(1.01)	(1.01)	(1.02)
A-level	5.14***	2.25**	2.01**	1.75*	-6.03***	-2.44**	-2.43**	-2.06*
	(0.97)	(0.94)	(0.97)	(0.95)	(1.07)	(1.06)	(1.07)	(1.06)
GCSE(A-C)	3.80***	1.87**	1.90**	1.79**	-2.77***	-0.36	-0.66	-0.57
	(0.87)	(0.84)	(0.87)	(0.85)	(0.99)	(0.99)	(0.98)	(0.97)
Prior achievement		0.35***	0.27***	0.26***		-0.43***	-0.33***	-0.30***
		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)
Gender								
Girls			-0.42	-0.63			-1.84***	-2.09***
			(0.58)	(0.58)			(0.65)	(0.66)
Ethnic group (Ref: White)								
Asian			0.39	-0.37			1.80	2.74**
			(1.12)	(1.25)			(1.17)	(1.34)
Black			-1.64	-2.48*			1.55	2.17
			(1.36)	(1.36)			(1.68)	(1.65)
Other/mixed			-0.44	-1.24			-3.53*	-2.61
			(1.62)	(1.63)			(1.88)	(1.91)
Parents' marital status (Ref: Single)								
Living with spouse or partner			2.31*	2.10*			-4.25***	-3.81**
			(1.23)	(1.24)			(1.46)	(1.47)
Separated, Divorced or Widowed			0.11	-0.01			-3.39**	-3.15**
			(1.37)	(1.37)			(1.56)	(1.57)
Parental view: likelihood of higher education (Ref: Likely)								
			-5.39***	-5.22***			7.39***	7.11***
Not likely			(0.72)	(0.72)			(0.81)	(0.79)
School type (Ref: Community school)								
Foundation Sch				1.49				-0.87
				(1.36)				(1.47)
Voluntary-Aided/Controlled Sch				2.52*				-1.45
				(1.42)				(1.23)
CTC City Tech colleges				1.76				16.92***
				(2.06)				(2.09)

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Table 3.1 Continued

	Humanities and Languages				Vocational subjects			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Gendered schools (Ref:mixed)								
Boys schools				-0.93				-2.83*
				(1.94)				(1.71)
Girls schools				1.50				-0.74
				(1.86)				(1.80)
First language English: school composition				-0.02				0.02
				(0.03)				(0.03)
KS2-KS3 value added measure				0.98**				-1.97***
				(0.40)				(0.41)
Constant	24.53***	5.44***	10.77***	-84.42**	37.04***	60.76***	56.23***	249.60***
	(0.82)	(1.38)	(2.03)	(39.86)	(0.89)	(1.66)	(2.16)	(40.71)
R^2	0.03	0.08	0.10	0.10	0.05	0.12	0.14	0.15

Source: own calculations using the LSYPE

Notes: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Final sample consists of 7567 observations. Weighted analyses.

Table 3.2 looks at the interaction between parental level of education and gender on the share of optional subjects that students take. On average girls are less inclined towards vocational subjects which appears to be relatively unaffected by social class (with the exception being girls whose parents have degree level education). Being from a lower educated family influences positively the girls' choice of science, while boys from lower educated backgrounds are more likely to go towards vocational courses (see Figure A3.1 and A3.2 in Appendix A). Coming from a more academic background seems to support boys participation in humanities and languages (see Figure A3.3 in Appendix A).

Table 3.2 OLS regression of interaction between parental highest level of education and gender on students' share of optional subjects

	(1)	(2)	(3)
VARIABLES	Science subjects	Vocational subjects	Humanities and Languages
Gender			
girls	1.30	-2.49*	-1.35
	(1.17)	(1.31)	(1.10)
Parents' highest education			
(Ref: Some or None Qualification)			
Degree	2.33**	-5.49***	3.02**
	(1.11)	(1.32)	(1.20)
HE: below degree	0.69	-3.28**	1.14
	(1.17)	(1.39)	(1.18)
A-level	2.73**	-2.82**	2.16**
	(1.15)	(1.30)	(1.08)
GCSE	1.44	-1.60	1.94*
	(1.03)	(1.26)	(1.10)
gender by parental education			
Female*degree	-4.90***	0.27	0.82
	(1.60)	(1.70)	(1.55)
Female*HE below degree	-3.96**	1.00	2.36
	(1.64)	(1.75)	(1.55)
Female*A-level	-5.80***	0.83	0.47
	(1.65)	(1.69)	(1.40)
Female*GCSE	-3.80***	0.60	0.71
	(1.43)	(1.62)	(1.45)
Prior achievement	0.11***	-0.28***	0.24***
	(0.02)	(0.02)	(0.02)
Ethnic group			
(Ref: White)			
Asian	1.48	1.59	1.30
	(0.97)	(1.13)	(1.02)
Black	1.72	1.39	-2.79**
	(1.31)	(1.50)	(1.25)
Other/mixed	2.19	-1.77	-0.53
	(1.54)	(1.60)	(1.40)
Parents' marital status			
(Ref: Single)			
Living with spouse or partner	2.01*	-4.40***	2.62**
	(1.10)	(1.34)	(1.15)
Separated, Divorced or Widowed	2.57**	-3.63**	1.50
	(1.14)	(1.41)	(1.18)
Parental view: likelihood of higher education			
(Ref: Likely)			
Not likely	-1.18*	6.10***	-4.71***
	(0.63)	(0.68)	(0.63)
Observations	8,631	8,631	8,631
R-squared	0.34	0.37	0.33

Source: Own calculations using the LSYPE

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Model also controls for school fixed effects. Weighted analysis

Entry into A-levels: direct educational pathways

Regarding entry into academic pathways (A-levels) Table 3.3 shows that a higher share of vocational subjects in the curriculum increase the probability of being in vocational path and employment. However, the inclusion of demographic characteristics and prior achievement to the basic specification closes a large part of the gap between the most and least advantaged across the whole distribution of vocational subjects. A part of the effect is taken away when school characteristics are included, as they also influence the choice of path; better schools discourage students from entering vocational paths, however they are unable to fully eliminate the gap.

The probabilities from the multinomial regression of post-16 pathway choices are summarised in McMullin and Kulic (forthcoming) and illustrate that the probability of entering into A-levels is heavily influenced by the educational background of the student; those whose parents are highly educated are able to move into A-levels even if they choose a large proportion of vocational subjects, which negatively affect exam results. In other words there is a compensatory effect of higher levels of parental education which can have negative impact on equality of opportunity.

Finally, Figure 3.1 compares the chances of crossing the A-C* math threshold with the chance of entering A-levels for students of different characteristics, based on fixed effect estimates. It graphically illustrates the divergence and convergence of paths for different student groups. A clear divergence of pathways is visible in math scores, which is similar but less pronounced for A-level entry. For students of parents with a degree or with A-level qualifications, the average predicted probability of reaching the GCSE math threshold remains relatively stable at 0.63 independent of subject choice, while the average predicted probability of entering A-levels for the same group of students declines from above 0.5 to slightly above 0.4 moving towards higher proportions of vocational courses. The decline in the two probabilities is however steeper for more disadvantaged students with the sharpest decline in performance are for students whose parents have GCSE(A-C) level education (Figure 3.1). These students are least likely to have parents experience an academic pathway but who possibly entered an occupation directly after finishing school. In this sense their children may decide that they need to obtain only a minimum standard of math performance for employment rather than maintaining the maximum grade level that they are capable of. The children of parents with very little education are also lowest performing regardless of the amount of vocational subjects they take.

Table 3.3 Multinomial regression of post-16 track choices (baseline A-levels): full model

Baseline	Vocational track					Employment				
A-levels	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Parents' highest education										
(Ref: Some or None Qualification)										
Degree	-0.78***	0.07	-0.01	0.07	0.10	-2.55***	-1.57***	-1.64***	-1.50***	-1.39***
	(0.24)	(0.26)	(0.27)	(0.27)	(0.27)	(0.37)	(0.37)	(0.38)	(0.39)	(0.38)
HE below degree	-0.63**	-0.02	-0.20	-0.12	-0.12	-1.48***	-0.77**	-1.08***	-0.97***	-0.95***
	(0.26)	(0.28)	(0.29)	(0.29)	(0.29)	(0.34)	(0.35)	(0.35)	(0.35)	(0.35)
A-level	-0.36	0.16	-0.07	0.01	0.02	-0.66**	-0.07	-0.46	-0.33	-0.30
	(0.26)	(0.28)	(0.29)	(0.29)	(0.29)	(0.29)	(0.32)	(0.33)	(0.33)	(0.33)
GCSE(A-C)	-0.14	0.20	-0.00	0.04	0.04	-0.65**	-0.26	-0.64*	-0.58*	-0.58*
	(0.25)	(0.27)	(0.28)	(0.28)	(0.28)	(0.30)	(0.32)	(0.33)	(0.34)	(0.34)
Share of vocational subjects(Ref: First quintile)										
Second quintile	0.39*	0.38	0.27	0.27	0.27	0.44	0.42	0.23	0.25	0.26
	(0.22)	(0.25)	(0.26)	(0.26)	(0.26)	(0.27)	(0.29)	(0.30)	(0.30)	(0.30)
Third quintile	1.07***	0.95***	0.82***	0.77***	0.76***	1.07***	0.94***	0.69**	0.64**	0.65**
	(0.24)	(0.27)	(0.28)	(0.28)	(0.28)	(0.27)	(0.29)	(0.31)	(0.31)	(0.31)
Fourth quintile	1.03***	0.77***	0.64**	0.59**	0.59**	1.28***	0.99***	0.76**	0.71**	0.72**
	(0.25)	(0.28)	(0.28)	(0.28)	(0.28)	(0.29)	(0.32)	(0.32)	(0.32)	(0.32)
Fifth quintile	1.41***	1.09***	0.93***	0.83***	0.84***	1.71***	1.36***	1.03***	0.95***	0.96***
	(0.28)	(0.30)	(0.30)	(0.30)	(0.30)	(0.31)	(0.34)	(0.34)	(0.34)	(0.34)
Vocational subjects by parents with degree (Ref: First quintile)										
Second quintile	-0.16	-0.28	-0.23	-0.25	-0.25	0.46	0.32	0.37	0.33	0.30
	(0.30)	(0.33)	(0.34)	(0.34)	(0.34)	(0.42)	(0.43)	(0.43)	(0.43)	(0.43)
Third quintile	-0.49	-0.85**	-0.80**	-0.76**	-0.76**	0.40	-0.02	0.06	0.06	0.04
	(0.34)	(0.37)	(0.38)	(0.38)	(0.38)	(0.49)	(0.51)	(0.52)	(0.52)	(0.52)
Fourth quintile	-0.50	-0.70*	-0.61	-0.56	-0.57	0.76*	0.52	0.65	0.66	0.62
	(0.36)	(0.39)	(0.39)	(0.39)	(0.39)	(0.45)	(0.47)	(0.48)	(0.48)	(0.48)
Fifth quintile	-0.44	-0.81*	-0.69	-0.66	-0.68	1.14**	0.72	0.96*	0.93*	0.89
	(0.43)	(0.46)	(0.47)	(0.47)	(0.47)	(0.52)	(0.55)	(0.56)	(0.56)	(0.55)

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Table 3.3 Continued

	Vocational track					Employment				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Prior achievement		-0.06***	-0.06***	-0.05***	-0.05***		-0.07***	-0.06***	-0.06***	-0.06***
		(0.00)	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(0.00)
Gender (Ref:Boys)										
Girls			-0.20***	-0.20***	-0.21***			-0.57***	-0.57***	-0.57***
			(0.07)	(0.07)	(0.07)			(0.08)	(0.09)	(0.09)
School type (Ref: Community school)										
Foundation Sch				-0.52***	-0.52***				-0.25**	-0.25**
				(0.11)	(0.11)				(0.13)	(0.13)
Voluntary-Aided/Controlled Sch				-0.38***	-0.37***				-0.22**	-0.19*
				(0.12)	(0.12)				(0.10)	(0.11)
CTC City Tech colleges				-0.96***	-0.94***				-0.98***	-0.92***
				(0.26)	(0.26)				(0.16)	(0.16)
KS2-KS3 value added measure				-0.11***	-0.09**				-0.17***	-0.13***
				(0.04)	(0.04)				(0.04)	(0.05)
school composition: SES					-0.29					-0.81**
					(0.35)					(0.41)
Other demographic characteristics			X	X	X			X	X	X
Other School characteristics				X	X				X	X
Constant	-0.50***	3.29***	3.14***	13.70***	12.12***	-0.55**	3.66***	3.62***	20.50***	16.50***
	(0.19)	(0.28)	(0.32)	(3.58)	(3.84)	(0.23)	(0.30)	(0.33)	(4.04)	(4.55)

Source: Own calculations using the LSYPE

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, weighted analysis

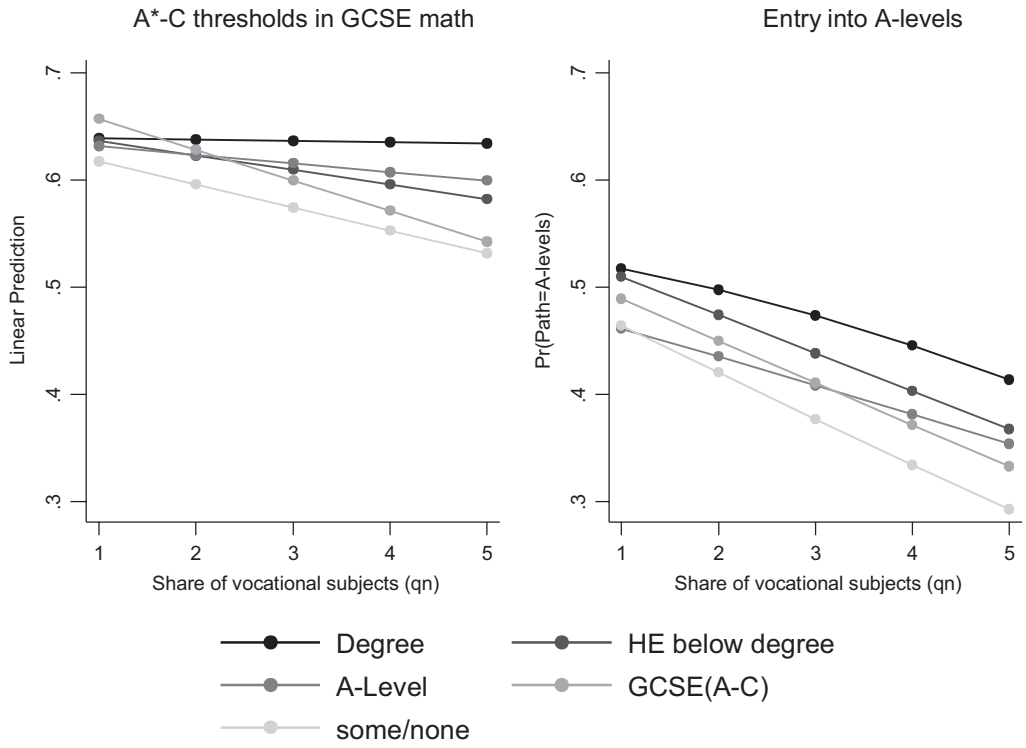

Figure 3.1 Average predicted probabilities of academic achievement and attainment

Source: Authors' own calculations from LSYPE, and published in the eduLIFE chapter.

Note: Weighted analyses. The first prediction is from linear probability model of math achievement. The second prediction is from multinomial regression of post-16 track choices. The models control for individual level variables and school fixed effects on the sample of 7426 observations.

Regarding gender differences, entry into A-levels for both boys and girls is negatively linked to the choice of vocational subjects controlling for demographic, prior performance and school level characteristics. For boys entry into A-levels is less dependent on share of humanities, however boys from more advantaged social backgrounds who choose a medium level of humanities and languages are more likely to enter A-level (they are boosted). For girls there is a compensatory effect for high parental education from more advantaged social backgrounds who have medium levels of vocational courses in entering A-levels (compensation).

Table 3.4 OLS regression of entry into A-levels: compensation of social background: separate models for boys and girls: full models

	Humanities		Vocational	
	female	male	female	male
Parents' highest education				
(Ref: Some or None Qualification)				
Degree	0.04	0.03	0.03	0.04
	(0.08)	(0.06)	(0.06)	(0.05)
HE below degree	0.01	0.09*	0.04	0.13**
	(0.06)	(0.05)	(0.08)	(0.06)
A-level	-0.01	0.03	-0.03	0.08
	(0.05)	(0.04)	(0.07)	(0.07)
GCSE(A-C)	0.03	-0.00	-0.02	0.10*
	(0.04)	(0.03)	(0.07)	(0.06)
Share of humanity and language subjects(Ref: First quintile)				
Second quintile	0.08*	0.07*		
	(0.05)	(0.04)		
Third quintile	0.19***	0.06		
	(0.05)	(0.04)		
Fourth quintile	0.18***	0.07		
	(0.05)	(0.04)		
Fifth quintile	0.17*	0.09		
	(0.09)	(0.06)		
Humanities and language subjects by parents with degree (Ref: First quintile)				
Second quintile	0.09	-0.00		
	(0.09)	(0.08)		
Third quintile	-0.02	0.17**		
	(0.09)	(0.08)		
Fourth quintile	0.03	0.08		
	(0.10)	(0.08)		
Fifth quintile	0.11	0.02		
	(0.12)	(0.09)		
Share of vocational subjects(Ref: First quintile)				
Second quintile			-0.05	-0.06
			(0.07)	(0.05)
Third quintile			-0.14**	-0.06
			(0.06)	(0.05)
Fourth quintile			-0.16**	-0.10**
			(0.07)	(0.05)
Fifth quintile			-0.13**	-0.14***
			(0.07)	(0.05)
Vocational subjects by parents with degree (Ref: First quintile)				
Second quintile			0.05	0.09
			(0.08)	(0.07)
Third quintile			0.22**	0.01
			(0.09)	(0.08)
Fourth quintile			0.08	0.10
			(0.09)	(0.08)
Fifth quintile			-0.01	-0.03
			(0.10)	(0.10)
Constant	-0.48***	-0.32***	-0.29***	-0.20***
	(0.05)	(0.06)	(0.08)	(0.07)
Observations	3,938	3,964	3,938	3,964
R-squared	0.43	0.45	0.43	0.45

Source: own calculations using the LSYPE

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

CONCLUSIONS

In conclusion the analyses examined two different dimensions of inequality of educational opportunity: the influence of parental education on the students' choice of optional subjects, and the relationship between the choice of subjects and parental education and progression. It was found that students whose parents have higher levels of education are more likely to choose academic subjects and less likely to choose vocational ones, even after accounting for prior performance. The results suggest that the choice of vocational subjects negatively influences both GCSE math performance and A-level entry. However, this effect is lessened if parents have a degree or equivalent, resulting in more stable performance and academic paths for their children.

Overall there seems to be a compensatory effect (see Bernardi & Boado 2014) of social origin on educational attainment and further progression despite student choice. As regards school quality, better performing schools favour the choice of humanities, and discourage the choice of vocational subjects. However, models with fixed effects indicate that parental influence on choice still dominates school influence (McMullin & Kulic forthcoming).

Regarding gendered pathways it seems that in both cases,- when it comes to lower social backgrounds, the choice is between more concrete options and academic options as boys from lower educated backgrounds are more likely to go towards vocational courses. The alternative for the girls from this background might be science (instead of vocational subjects); possibly this is because science may be seen as more practical, or there may be less aversion to these subjects as knowledge of what is required to succeed in scientific careers might be more limited. Additionally, less cultural capital may be associated with STEM for girls than, for example, more traditional cultural subjects such as art, history and music. Overall there are no significant gender and social background interactions for models 2 and 3 suggesting that the compensatory effect of parental education is similar (although slightly stronger for boys) for both genders.

Concern with freedom of choice and competition works on the assumption that all parents are equal in accessing "better" education for their children and can make the same choices. Those from less educated backgrounds are possibly less able to draw on their parents educational experience, while those with low financial resources are more often restrained in accessing fee paying private schools. Even within the publicly funded system, curriculum differentiation means that students are restricted (for example, by school organisation, preference or prior performance) into loosely defined educational pathways. Students

unaware of the implications of choosing certain types of subjects may find themselves in courses that do not serve them well in gaining access to more useful fields of study or better labour market positions later on. Indeed, creating a simpler curriculum with fewer options could be an effective way in which policy might have an impact on social inequality in the English education system.

Finally, due to the need for more comparative data on the performance of independent schools, it is possible that these results are actually an underestimation of the role that social origin plays in inequality of opportunity. Further analysis including independent schools would greatly benefit the understanding of institutional and curricular differentiation in England.

CHAPTER 4: THE CONSEQUENCES OF SHIFTING EDUCATION AND ECONOMIC STRUCTURES FOR GENDER DIFFERENCES AT LABOUR MARKET ENTRY IN BRITAIN

INTRODUCTION

Women's educational attainment levels reached or even surpassed those of men in the latter half of the 20th century in most Western societies (Vincent-Lancrin 2009). Nevertheless, the gender wage gap still stands: generally speaking, women earn less than their male counterparts (18 per cent at median earnings) in the UK (OECD 2012). This difference is often attributed to family formation. It is based on the assumption that, despite higher levels of investment in education, women will have to prioritise their families (at some point) during their career.

The Women, Employment and Society Survey 1980 indicated that, on average, women in Britain spent seven of the typical eight years between leaving full time education and the birth of their first child working full time. This varies only slightly with level of education, because delay in first birth (due to longer periods in education) is not offset entirely by a shorter period in the labour force (Martin & Roberts 1984). This is a key period in understanding how women's careers develop and how initial education contributes to their careers when family concerns may not necessarily be their first priority.

This chapter aims to explore vertical gender inequalities (using wages and CAMSIS scores) and horizontal gender differences (occupational field) in the first significant job an individual obtains after leaving initial education in Great Britain. It will also describe the role that educational pathways can play in determining these differences. Retrospective data from the BHPS was used to establish changes over time with respect to gender differences at labour market entry. Additionally a novel approach is taken by following the youngest members of the British Household Panel Study in order to study education trajectories and labour market entry.

CHANGES IN EDUCATION AND ECONOMIC STRUCTURES IN 20TH CENTURY BRITAIN

Britain has seen many changes in its economic and educational structures over the course of the 20th century. It is important to consider how these changes have influenced gender differences in the labour market over time. In the following section, the main determinants of the gender reversal in educational attainment in Britain are discussed. The general changes in educational pathways that influence gender differences at labour market entry are also highlighted. The expectations regarding horizontal gender differences and vertical inequalities and how these two dimensions influence one another are outlined in the next section.

THE REVERSAL OF THE GENDER GAP IN EDUCATIONAL ATTAINMENT IN BRITAIN

During the two World Wars, British women were recruited *en masse* into the industrial labour market. However, post-war policies reflected strong normative assumptions about women's secondary role in the labour market, pushing women (when in work) toward low-paid, low-skilled jobs in the clerical or retail sector. A change in attitude at the policy level emerged in 1957 with the publication of "Technical Education," a government White Paper concerned with a lack of skilled labour. It criticised the fact that only one-fifth of young women progressed to further education, mostly in "nursing", "home craft", or "secretarial skills". The report was progressive in terms of recognizing women in the labour force and in recommending that girls be trained in science and math. Nonetheless it qualified that the encouragement of girls in further education should take place "if only to bring the numbers up to what they should be in subjects traditionally regarded as suitable for girls" (1957 White paper, quoted in Holloway 2005 p. 203). Throughout the 1960s, however, most young women continued to enter work directly from school, and the number of women in training courses actually declined (Holloway 2005).

With the growth of the university and polytechnic sector and the introduction of maintenance grants, many more women were able to continue their education. These gains were especially strong in newer forms of education, particularly in part-time courses (Halsey 2000). There has also been a tendency for some vocational training to shift out of the

workplace and into colleges of further education and polytechnics (Heath & Cheung 1998). However, although this pushed an increasing amount of women to attain higher qualifications, their occupational level remained the same.

By 1986, 51.8 per cent of tertiary students were female, although notably Oxford and Cambridge remained far below this figure (Halsey 2000). Kilpi and Chan (2010) noted that whereas girls began to pull away from boys in terms of achievement in secondary level in the late 1980s, the pattern at university level is of more gradual change over a longer period of time.

GENERAL CHANGES IN THE STRUCTURE OF EDUCATION IN BRITAIN: CHANGES IN EDUCATIONAL PATHWAYS

The introduction of comprehensive education and the spread of certification are the two main trends that have changed educational pathways in Britain. Comprehensive education led to a shift from early selection at age 11 to student choice at age 16. A change to later decision making can reduce horizontal gender differences, because younger children are more likely to make choices that match their gender identity (Imdorf et al. 2014). Nevertheless, numerous opportunities for making gendered choices remain and some subject choices are already made at age 14.

The spread of certification to include most of the school population has led employers to recruit mainly university graduates or certified school leavers. This can be characterised as a shift from sponsored to contest mobility (Heath & Cheung 1998). Certification has become a major means of occupational exclusion, and uncertified school leavers face higher risks of unemployment (Ishida et al. 1995). In principle, these changes should favour the highly educated, and, as a result, women should have increased their share of better jobs. However the key feature of the British education system is flexibility: the same qualification can be obtained in a variety of institutions and by different modes of study. There are now also more vocational certificates awarded in schools. However, multiple reforms have made the value of certain certificates unclear. In sum, the link between certificates and occupations may not be very strong in Britain, because general qualifications do not necessarily match the specific needs of employers or occupations (Heath & Cheung 1998).

The low level of standardisation means that individuals often obtain firm-specific skills on the job; consequently internal labour market practices play a large role in labour

market outcomes. Within internal labour markets, investment in on-the-job training is only worthwhile to the firm if employees stay long enough to cover their training costs (Blossfeld 1987). Therefore young women are less likely to obtain "entry jobs" that are coupled with long career ladders (Blau & Jusenius 1976) or require large investment in training on the job because they are more likely to interrupt their careers. Employers may also have to rely on their prior experiences when making-hiring decisions, which may mean that highly gender segregated occupations change more slowly. On the other hand, change is more likely to occur in jobs requiring a higher level of education or professional qualifications that provide clearer signals.

CHANGES IN THE STRUCTURE OF THE LABOUR MARKET: HORIZONTAL GENDER DIFFERENCES AND FIELD OF OCCUPATIONAL ACTIVITIES

The persistence of horizontal gender segregation in the labour market has also been attributed to post-industrialism and the "structural shifts in the economy that occur in an ideological context in which care, service and interpersonal interaction are widely understood to be female tasks" (Charles 2005, p. 290). More specifically, the expansion of service industries affects the structure of occupational gender segregation in two ways: first, through changes in the "industrial composition" of occupations (the "compositional effect") and second, through workplace adaptations that may make routine non-manual work more compatible with domestic responsibilities (Charles 2005).

In Britain "there has been a general shift "upward" into non-manual work first at the clerical level and then at the professional level" (Blackburn et al. 2002, p.527). Newly created jobs had to be filled, and women made up the bulk of the surplus workforce available (Blackburn & Jarman 2006). Married women without children were the first to move into the labour force followed closely by mothers (Gallie 2000). By 1980, 90 per cent of mothers returned to work after childbirth (Dex et al. 2008). More generally, women's relatively high labour market participation in the UK is supported by a highly developed service sector, low labour market rigidity, and good part-time opportunities (Steinmetz 2012). Traditionally, women were more likely to be concentrated in low-level service jobs due, in part, to the increasing tendency for household work (including childcare, cleaning and other domestic duties) to be outsourced. Men, on the other hand, were typically concentrated in production-oriented/manual occupations.

With the decline of male-dominated manual occupations, working men and young male jobseekers were forced increasingly into either the newly created service jobs, which were also attractive to female job seekers, or other more female-dominated occupations. Therefore it is important to examine whether an increase in gender-balanced occupations and males in female-dominated areas has occurred. By the time of the 2001 census, the distribution of employed women through occupational categories was much closer to that of men in comparison to 1980 (Dex et al. 2008).

VERTICAL INEQUALITIES: QUALITY OF OCCUPATIONS AND FIRST SIGNIFICANT OCCUPATION

There is a general consensus that women are paid less than men and that about one-quarter of this difference remains unexplained. For example, Perales (2013) finds that low pay in female-dominated occupations in Britain cannot be explained fully by low skill specialisation or by observable or unobservable characteristics. He takes the remaining wage penalties in such occupations as evidence of institutional devaluation of "women's work".

Human capital theories seek to explain the gender pay gap by gender differences in human capital accumulation. There are several varieties of this explanation, all of which have their roots in the female commitment to caring duties reducing the time and energy given to careers. Mainly these theories relate to actual labour market experience, but can also be extended to the amount of investment in education both before and after labour market entry in anticipation of future labour market attachment (Manning & Swaffield 2008). Manning and Swaffield find that in the UK the gender pay gap at labour market entry is approximately zero, but 10 years after there is a gap of almost 25 log points. Out of that gap only 2.8 log points could be explained by differences in labour market intermittence (interruption), 3.7 by differences in working part-time, 4.5 by differences in training and perhaps 1.5 by differences in occupational choice (horizontal differences). Triventi (2013) decomposes the raw gender wage gap between the sexes five years after graduation in European societies and finds that work–family reconciliation variables play a strong role in accounting for gender wage differences in the UK. He also finds almost one third of the gap in the UK remains unexplained by human capital, occupational or reconciliation factors.

In relation to changes over time, Bukodi (2009) finds no consistent evidence of the importance of qualifications becoming greater (for occupational attainment measured using a scale based on occupational earnings) across cohorts for either men or women. She does,

however, find the possibility of a cohort-specific effect for both men and women in the 1958 cohort. Nonetheless, the most striking finding is the lack of "systematic, over-time, as opposed to cohort specific changes" in processes of occupational attainment (Bukodi 2009, p.15).

With regard to prestige levels, previous studies have shown that women tend to enter higher status jobs more than men (Blackburn & Jarman 2006; Jarman et al. 2012) due in part to the rise of higher prestige non-manual service jobs and the decline of male-dominated manual jobs. Additionally, Jarman et al. (2012) argue that whereas previously women tended to be employed in lower level, non-manual occupations such as clerical work, more recently they have contributed to the considerable expansion of professional employment. According to Krymkowski and Mintz (2008), we know from previous research that the diffusion/mixing of women and men in occupations requiring higher education has been much greater than for either clerical or blue-collar jobs (Cotter et al. 2004; England 2005), and that better educated women have moved into well-paid, male-dominated occupations (Gatta & Roos 2005). Bukodi and Dex (2009) find that women in Britain are more frequently found entering low level jobs (as measured by the hourly average earnings of full-time workers), and that they are less likely to progress to better ranking jobs over time.

For the interaction between horizontal and vertical gender differences in Britain, not only are wages lower in female-dominated occupations but also men earn more within those occupations (Perales 2013). Women who do enter male-dominated professions tend to be paid less than their male counterparts. However, in gender-balanced occupations, pay tends to be more equal (Perales 2013). Overall segregation (in this case measured with the Gini coefficient) and the vertical dimension of segregation are found to be inversely related. In other words, the higher overall segregation is, the lower the advantage to men or, for CAMSIS, the higher the advantage to women (Jarman et al. 2012). The implication is that the less women are in competition with men, the more likely they are to be in senior positions.

DATA AND METHODS

The basis for the data used in this study is the nationally representative sample of 5,505 British households collected as the original sample of the British Household Panel Study (BHPS). The dataset consists of 18 panel waves corresponding to the years 1991 to 2008/2009.

The BHPS contains retrospective lifetime employment histories collected in Wave 3, and we use this together with current employment information (also from wave 3). The birth cohorts included from the lifetime employment histories are individuals born from 1940–56 and those born from 1957–71. Immigrants are excluded who arrived after age 10. First significant jobs are defined as ones that last for at least 6 months after leaving education. Jobs that are held during educational gaps of a maximum of 18 months are not considered as significant jobs, allowing for a gap year from education together with the associated summer breaks.

The BHPS does not include questions about lifetime education histories, so it is necessary to assume that the education individuals hold when entering the BHPS is the education that they had at labour market (LM) entry. Therefore, it was also decided to follow the youngest members of the panel in order to study education trajectories and LM entry. All respondents who are observed in the BHPS at the age of 16 (children of original BHPS members) are included in this sample, with the oldest being born in 1974. Work-life history files are constructed using the Mare files,[29] and the first significant employment spell of the sampled individuals is extracted.[30]

The main dependent variables for horizontal segregation are field of occupational activities (as defined by Blossfeld's 1987 classification). Prestige (measured with the CAMSIS scale) is examined to explore changes in vertical inequality across all three cohorts. Logged hourly wages[31] are also analysed for the youngest cohort. The Blossfeld (1987) classification assigns occupations based on activities (rather than industrial sector) into three broad groupings: administration, service, and production. Administration includes commercial and administrative occupations as well as managerial professions (including occupations that control the factors of production). Service includes occupations that provide security, recreation, and care. It also includes all liberal and service professions that require a professional specialisation or a degree (e.g., food service personnel, nurses, educators, and police officers). Finally, production contains occupations and professions that manage primary resources or manufacture/maintain goods (e.g., farmers, technicians, mechanics, and engineers).

Educational level is the main independent variable (along with gender) and is defined by CASMIN. CASMIN takes into account (1) the differentiation of a hierarchy of educational

29. See the methods section for more details.
30. Youth cohort: 795 individuals entered the labour market within 24 different occupational categories (at the two digit level).
31. Wages have been adjusted for inflation to 2005 levels.

levels, both in terms of the length of the educational experience as well as in the required intellectual abilities and corresponding curricular contents, and (2) the differentiation between "general" and "vocationally oriented" education (Müller 2000).
Field of occupational activities is used as an independent variable in models for vertical inequalities. Most independent variables are interacted with gender.

RESULTS

This section, presents the results of the investigation of the factors influencing horizontal gender differences and vertical gender inequalities in the first significant job an individual obtains after initial education.

Descriptive analysis: Horizontal gender differences and vertical inequalities in first significant occupation

First of all, the dissimilarity index (Duncan & Duncan 1955) and IP index (Karmel & Maclachlan 1988) are used to measure the extent to which men and women are distributed across occupations: the more equal the distribution, the less segregation there is (Steinmetz 2011). It was found that generally men and women have become less segregated over time with regard to labour market entry (Table 4.1).

Table 4.1 Gender dissimilarity indices: ISCO-88 (3 digit) by gender and cohort

	Duncan	95% CI		IP	95%CI		ISCO-88 (3 digit)	
		Lower	Upper		Lower	Upper	Categories	*N*
1940–56	.64	(.61,	.68)	.32	(.30,	.33)	91	2,022
1957–71	.53	(.50,	.56)	.26	(.25	.28)	97	2,170
1974–91	.41	(.35,	.46)	.20	(.17	.23)	76	795

Source: Own calculations using the BHPS

Figure 4.1 shows that the share of production jobs has declined in favour of service and administrative jobs over time for men and in favour of service jobs for women, with most of the change happening between the last two cohorts. Overall, a greater proportion of men are found to be employed in production, with more women working in service and administration jobs. The proportion of women working in administration in the first cohort is particularly large, with office clerks as the largest category in the first two cohorts.

Commercial occupations such as salespersons are also a large category within administration. In the youngest cohort, the proportion employed in administrative jobs is almost equal between the two genders.

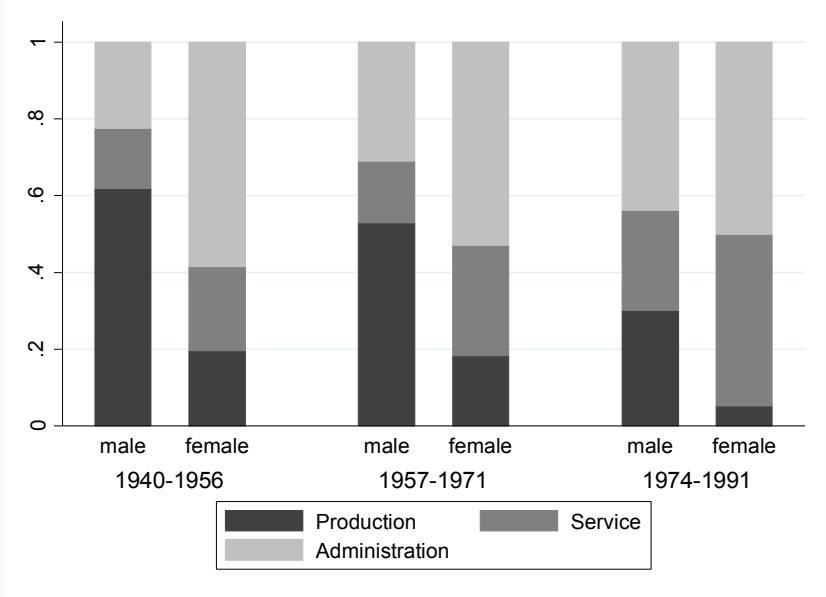

Figure 4.1 Field of occupational activities by cohort and gender

Source: Own calculations using the BHPS

In relation to job quality and field of occupational activity (Figure 4.2), there appears a greater dispersion of prestige scores for both men and women in service particularly in the oldest cohort (ranging from 20 to 75 between the 25th and 75th percentile for men and from 37 to 70 points for women). Moreover, men have a more even distribution and greater range of prestige scores across all fields and cohorts, suggesting that they are found more often than women in either the best or the worst positions with regard to prestige. Women, in contrast, are concentrated around the median. Additionally, men tend to have higher prestige in production jobs than women, whereas the opposite is the case in service jobs, and men and women are relatively equally placed in administration jobs. Generally there has been relatively little change over time in median prestige by field and gender, with the exception that women in the youngest cohort have slightly overtaken men in obtaining prestige jobs in production and there has been a decline in the prestige of service jobs over time.

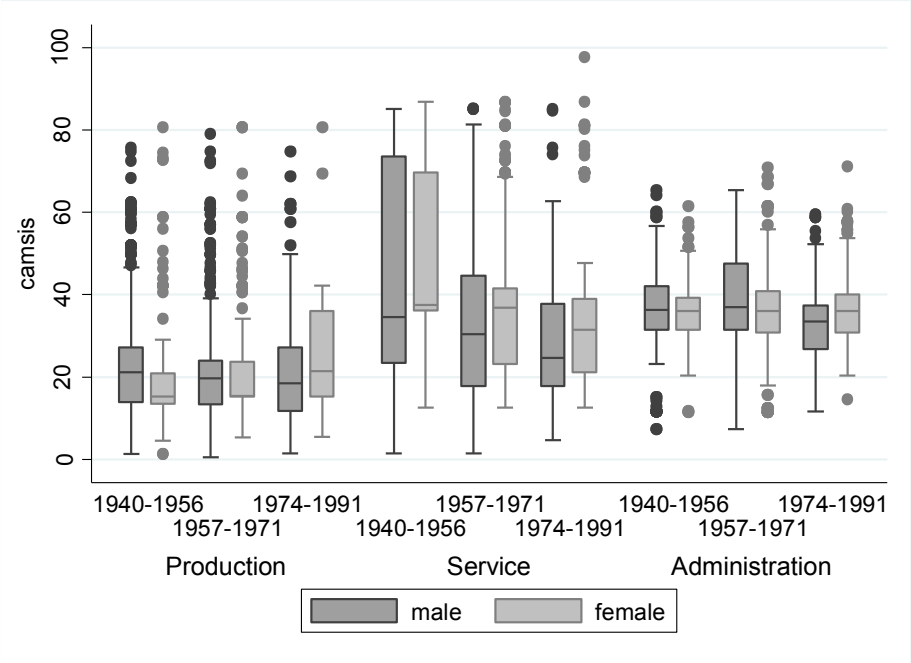

Figure 4.2 Boxplot illustrating the range, interquartile range, and median (central line) of prestige scores of the first significant job by birth cohort, field of occupational activity, and gender

Source: Own calculations using the BHPS

Multivariate analysis: horizontal gender differences

Field of occupational activity

In this section, multinomial logistic regression models are used to investigate the factors influencing horizontal gender differences as defined by the Blossfeld classification (1987). It was found that the chance of entering a production job relative to administration is much larger for men than for women (Model 1, Table 4.2), although the chances for both genders have fallen over time: for men already between the two oldest cohorts; and for both genders, in the youngest cohort. It is in the middle cohort (1957–71) that the chances of women are closest to those of men (Model 2). Controlling for level of education (Model 3) changes these main results relatively little. With regard to entering a service job relative to administration, the overall picture is that there is no difference between the genders and that service jobs have grown at the expense of administration jobs over time. However, on closer examination, the picture is one of gender reversal (Model 2): Whereas the likelihood of women entering service jobs relative to administration is lower compared to men in the oldest cohort (1940–56, log odds ratio of gender difference: -0.63, $p < 0.01$), chances are relatively equal in the

middle cohort (1957–71, 0.04, *ns*) and have reversed for the youngest cohort (1974–91, 0.41, $p < 0.01$). The change seems to come mostly from women, and the main result is largely the same even after controlling for level of education (Model 3). The negligible explanatory role of education for explaining gender differences can also be seen when looking at the average marginal effect of gender across the different models (bottom of Table 4.2).

With regard to the effect of education, it is relatively clear that the highest odds of entering production relative to administration jobs among men are for those with vocational or elementary education (Model 4). However, the main pattern for women is somewhat U-shaped, with both extremes having somewhat higher odds of entering production jobs relative to administration than medium levels of education. On the one hand, there are hardly any education level differences among men when it comes to entry into a service job relative to administration. On the other hand, among women, those with medium secondary and lower levels of education tend to be least likely to enter service jobs relative to administration, whereas those with (lower) tertiary education are most likely to do so (this may be due to the fact that nurses are in this category).

Overall, there has been a general shift from men participating in production to men participating in service and administration. Women have moved from production and administration to service-related occupations. However, they are generally more likely to be in administrative jobs. Controlling for level of education, women are now equally likely to be in service and administration jobs, whereas men are now approximately equally likely to be in production and administration jobs[32].

32 See figure B4.4 in the appendix for average marginal effects for the different occupational fields, gender and cohorts.

Table 4.2 Multinomial logit model of field of occupational activities (base/reference category: administration): logit coefficients and level of statistical significance.

	Model 1		Model 2		Model 3		Model 4	
	Production	Service	Production	Service	Production	Service	Production	Service
Gender (ref. male)								
Female	-1.80**	0.04	-2.11**	-0.63**	-2.36**	-0.57**	-1.64**	-0.25
Cohort (ref. 1940–56)								
1957–71	-0.20*	0.16+	-0.48**	-0.30+	-0.34**	-0.30+	-0.40**	-0.24
1974–91	-1.16**	0.52**	-1.39**	-0.17	-0.87**	-0.08	-0.88**	-0.01
Cohort (ref. 1940–56)								
1957–71 × Female			0.51**	0.67**	0.72**	0.64**	0.94**	0.50*
1974–91 × Female			0.22	1.04**	0.50	1.01**	0.60+	0.80**
Education level (ref. High tertiary)								
1a: None					1.55**	-0.28	1.40**	0.30
1b: Elementary					0.96**	-0.18	1.20**	0.14
1c: Basic vocational					0.71**	-0.57*	1.81**	0.26
2b: Middle general					0.29	-0.45**	0.57*	-0.23
2a: Middle vocational					0.57**	-0.68**	1.85**	-0.38
2c: Gen: high general					-0.89**	-0.56**	-0.67*	-0.57*
2c: Voc: high vocational					0.63**	-0.65*	1.01**	-1.01+
3a: Lower tertiary					0.34+	0.21	0.42+	-0.19
Education level × Female (ref. High tertiary)								
1a: None × Female							-0.12	-1.09**
1b: Elementary × Female							-0.78+	-0.66
1c: Basic vocational × Female							-2.58**	-1.14*
2b: Middle general × Female							-0.90*	-0.38
2a: Middle vocational × Female							-3.15**	-0.45
2c: Gen: high general × Female							-0.90	0.00
2c: Voc: high vocational × Female							-1.81**	0.47
3a: Lower tertiary × Female							-0.72+	0.56+
Constant	0.81**	-0.81**	1.02**	-0.35**	0.38*	-0.13	0.18	-0.26
Observations	4,954	4,954	4,954	4,954	4,954	4,954	4,954	4,954
Female AME								
Production	-0.34**		-0.34**		-0.34**		-0.34**	
Services	0.12**		0.12**		0.13**		0.13**	
Administration	0.21**		0.21**		0.21**		0.21**	

Note: **p < 0.01. *p < 0.05. +p < 0.10. Models weighted to take the complex survey design and sample sizes into account (cross-sectional weights are used for cohorts using retrospective information and longitudinal weights are used for the youngest cohorts).

Source: Own calculations using the BHPS

Multivariate analysis: vertical inequalities

Occupational prestige

In relation to vertical inequalities measured in the form of prestige (Table 4.3), it is found that women tend to enter higher prestige first jobs than men (difference of 6.35 CAMSIS

points).[33] If controlled for education, the overall gender difference increases slightly (7.11), while controlling for occupational field reduces the female advantage (3.17). The middle cohort experienced a dip in average prestige compared to the other two (Model 2). However, after controlling for changing levels of education (Model 3), the trend in average prestige over cohorts is downward, and this trend is stronger for women than for men (e.g., the average prestige is 6.1. CAMSIS points lower among men in the most recent cohort compared to the oldest cohort and the difference is 9.3 CAMSIS points for women). Nevertheless in all cohorts women obtain first jobs with higher levels of prestige than men do.

University-educated individuals have the highest prestige and this is followed by those with a lower tertiary qualification and those with high general qualifications. There are only two significant interactions between gender and level of education (Model 4), which show that women benefit more than men do from basic and middle vocational qualifications. The general trend in the education coefficients suggests that for men, general qualifications are more beneficial than vocational ones at the same level, whereas for women, the difference between the two is smaller. However, this gender difference in the effect of education seems to be related to occupational fields and differential rewards therein, and the difference between vocational and general qualifications at the same level tends to be rather small for both genders (Model 5).

Production jobs tend to have lower prestige than service or administration jobs and the difference is larger for women than for men (Model 5: approximately 10 CAMSIS points for men and 13 for women). Moreover, the more negative trend in prestige for women that was reported above is probably due to the changing composition in types of jobs (the interaction between cohort and gender is no longer significant in this model).

33. The results in this section have been checked against models where either the male CAMSIS scores for occupations are used or the female CAMSIS scores (See tables B4.4 and B4.5 appendix B) are used for the whole sample (rather than male for men and female for women). These results are generally the same as those reported here.

Table 4.3 OLS linear regression models for first significant job prestige score (gender-specific CAMSIS)

	Model 1	Model 2	Model 3	Model 4	Model 5
Gender (ref. Male)					
Female	6.35**	6.47**	8.74**	8.52**	2.77
Cohort (ref. 1940–56)					
1957–73	-1.52**	-1.79*	-3.88**	-3.73**	-4.43**
1974–91	-0.43	0.05	-6.13**	-6.44**	-8.43**
Cohort (ref. 1940–56)					
1957–73 × Female		0.53	-1.67*	-2.02*	-0.54
1974–91 × Female		-0.90	-3.22*	-2.62+	-1.00
Education level (ref. High tertiary)					
1a: None			-34.65**	-33.91**	-30.99**
1b: Elementary			-28.55**	-29.52**	-26.84**
1c: Basic vocational			-27.30**	-29.85**	-26.05**
2b: Middle general			-23.31**	-23.31**	-21.78**
2a: Middle vocational			-24.51**	-27.10**	-22.70**
2c: Gen: high general			-18.98**	-17.35**	-18.03**
2c: Voc: high vocational			-22.60**	-23.90**	-20.74**
3a: Lower tertiary			-16.51**	-15.91**	-14.74**
Education levels × Female (ref. High tertiary)					
1a: None × Female				-1.31	-0.42
1b: Elementary × Female				2.55	1.19
1c: Basic vocational × Female				4.66*	0.23
2b: Middle general × Female				0.04	-1.70
2a: Middle vocational × Female				4.27*	-1.25
2c: Gen: high general × Female				-2.84	-3.19
2c: Voc: high vocational × Female				2.84	-1.02
3a: Lower tertiary × Female				-1.17	-2.92
Occupational field (ref. Production)					
Service					10.47**
Administration					9.69**
Occupational field × Female (ref. Production)					
Service × Female					2.57
Administration × Female					3.60**
Constant	29.49**	29.43**	52.67**	52.78**	46.91**
Observations	4,987	4,987	4,987	4,987	4,987
R^2	0.04	0.04	0.37	0.38	0.45
Female AME	6.35**	6.35**	7.11**	7.13**	3.17**

Note: **p < 0.01. *p < 0.05. +p < 0.10. Models weighted to take the complex survey design and sample sizes into account (cross-sectional weights are used for cohorts using retrospective information and longitudinal weights are used for the youngest cohorts).

Source: Own calculations using the BHPS

Wages

Due to no retrospective data being available on earnings, the models examining the impact of gender on hourly wages (Table 4.4) consider only the youngest cohort. I have also had to collapse some of the education level categories because some of these contain very few observations in the youngest cohort. The findings suggest that there is no significant difference between men and women when we consider raw gender differences (Model 1) or control for educational pathway (Model 2).

Examining the association between gender and educational pathways in more detail (Model 3), a negative effect was found for both men and women for all forms of education relative to a university degree. At the upper secondary level, general qualifications tend to be more beneficial than vocational ones. Moreover, whereas qualifications at the middle level (GCSE/O-level) tend to give the lowest wage returns for men, this is not the case for women. Overall, there is a slight tendency for differences between education levels to be slightly smaller among women compared to men, although the only significant difference is for the already-mentioned effect of middle-level education[34].

Overall, there are no significant differences in earnings between different occupational fields or gender differences therein (Model 4). There is a slight suggestion that this is more the case for men than for women, and that for the latter production jobs would give an advantage compared to both women in administration and services as well as men in production. However, this cannot be confirmed, probably partly due to the small sample size. Moreover, no significant effect on hourly wages was found from being a part-time worker nor a gender difference in this effect (Model 5).

34 Figure B4.5 in the appendices show the average marginal effects of wage differences by gender and educational level and confirms no significant wage gap between men and women for different educational levels. The exception being a slight female advantage to mid/level qualifications (approx. 0.2).

Table 4.4 OLS linear regression models for log of hourly wages in first significant job

	Model 1	Model 2	Model 3	Model 4	Model 5
Gender (ref. Male)					
Female	0.05	0.05	-0.05	0.13	0.14
Education levels (ref. High tertiary)					
1a–c: Basic education		-0.61**	-0.65**	-0.64**	-0.62**
2a–b: Middle education		-0.58**	-0.70**	-0.70**	-0.68**
2c: Gen: high general		-0.40**	-0.42**	-0.42**	-0.41**
2c: Voc: high vocational		-0.56**	-0.56**	-0.55**	-0.54**
3a: Lower tertiary		-0.40**	-0.45**	-0.44**	-0.43**
Education level× Female (ref. High tertiary)					
1a–c: Basic education			0.08	0.10	0.12
2a–b: Middle education			0.24*	0.25*	0.27*
2c: Gen: high general× Female			0.05	0.07	0.10
2c: Voc: high vocational × Female			0.01	0.02	0.05
3a: Lower tertiary × Female			0.10	0.10	0.13
Occupational field (ref. Production)					
Service				-0.01	0.01
Administration				0.04	0.05
Occupational field × Female (ref. Production)*					
Service × Female				-0.19	-0.19
Administration × Female				-0.22	-0.23+
Part-time (ref. Full-time)					-0.08
Part-time × Female					-0.06
Constant	1.64**	2.04**	2.09**	2.08**	2.07**
Observations	762	762	762	762	762
R^2	0.00	0.14	0.14	0.15	0.15
Female AME	0.05	0.05	0.05	0.07	0.08

Note: **p < 0.01. *p < 0.05. +p < 0.10. Models weighted to take the complex survey design and sample sizes into account (longitudinal weights)

CONCLUSION

Initially after World War II, women were steered toward training in occupations that did not undermine gender norms. However a subtle change in perspective from reserve labour force to more permanent members came about with the introduction of a 1957 government White Paper in response to concerns about the skill gap. At the same time, economic restructuring led to an increase in service-related occupations (traditionally seen as female-dominated) and a decline in production occupations (traditionally male-dominated) leading to increased female labour force participation. This coupled with the shift toward contest mobility and a later age of decision making (influencing occupational choices) should have decreased gender segregation over time in Britain, whereas an increase in female educational attainment should theoretically have resulted in greater labour market returns for younger women. A reduction was found in horizontal gender differences over time; however, educational level seem to have had relatively little impact. Generally, vocational qualifications increase participation in production jobs, which remain male-dominated. Women with higher levels of education have shifted from administrative and commercial occupations into service ones, whereas men with higher general and higher vocational levels of education have shifted into administration. There are still more women in administrative positions however, and they have made few inroads into production. In addition, there has been a general shift from men participating in production to men participating in service jobs.

Interestingly the prestige level of entry occupations has also decreased over time after controlling for changing levels of education. Nevertheless, at all education levels and in all cohorts, women obtain first jobs with higher levels of prestige. However, men are more likely to be found in occupations at the lower and higher end jobs of the prestige scale. General qualifications appear to be more beneficial than vocational qualifications, because the latter tend not to increase prestige relative to just entering the labour market directly with an academic qualification. However, this is probably because vocational qualifications prepare individuals for manual occupations with lower levels of prestige than non-manual occupations that can be entered with general qualifications, as the difference is reduced when controlling for occupational field. No significant gender gap was found for the youngest members of the BHPS with regard to wages. Some differentiation is present within mid-level general and vocational qualifications in favour of women, possibly because lower service jobs may be better paid than lower manual jobs. Overall this suggests that parity of wages

exists at labour market entry, and that the gender wage gap opens up later in women's careers in Britain.

In short, despite great changes in the educational system and the economy, the picture with regard to vertical inequalities is one of relative stability: Women have always been somewhat advantaged in terms of prestige levels attained at this stage of their career, and there is parity with regard to hourly earnings. It is, of course, possible that change has happened with regard to earnings; indeed, a previous study has found women in earlier cohorts to enter occupations with substantially lower average earnings than in those that their male peers enter (Bukodi 2009). Unfortunately it is not possible to observe this.

Greater change has taken place in horizontal differentiation, with young men and women starting to resemble each other more closely in their occupational choices. It is likely that this change has been brought about by both the changing economic structure as well as changes in the educational system. Nevertheless, marked differences in occupational choices between men and women remain – even at the very beginning of their labour market careers.

CHAPTER 5: CUMULATIVE (DIS)ADVANTAGE? PATTERNS OF PARTICIPATION IN ADULT LEARNING IN THE UNITED KINGDOM

INTRODUCTION

Throughout Western societies, globalizing and demographic influences have placed additional pressure on policy makers to encourage investment in adult learning in order to maintain high levels of worker productivity and to promote equity between different socio-economic groups. However, the conclusion of many previous studies on adult learning has been that educational opportunities follow a pattern of cumulative advantage, whereby the highly educated are more likely to participate (e.g. Elman & O'Rand 2004).

The education and training systems in the United Kingdom have been characterised by important policy changes and energetic re-organisations addressing the standardisation of the education system (with limited success). It is important to consider the role of training for progression in the labour market in the UK context as the institutional set-up means that potentially many people enter employment directly after general education and acquire occupational qualifications through on-the-job training. In this sense individuals often do not obtain their highest level of qualification until well into their occupational careers[35]. Formal and non-formal structures of adult learning represent different institutional and labour market pathways, whereby individuals invest in their own job-related skills and/or are invested in by their employers.

For formal adult education, proportionately more people from working-class than middle-class origins study as adults than at the school-leaving stage in the UK (Egerton 2001). However in general employed adult learners may be concentrated in courses of shorter duration, or restricted to participation in institutions that offer part-time courses or other options to combine study with work.

For non-formal learning, employer incentives play a major role as employers may be more or less willing to invest in training of often marginalised groups (such as women or the unemployed). Alternatively, since labour market mobility in the UK is high, employers can

35. The proportion of mature students in higher education rose from approx. 3% in the 1960's to almost 1/3 of the student population in Britain in the 1990s (Egerton, 2001).

hire women and the unemployed easily and invest in their training after re-entry in order to catch them up.

As outlined in chapter one of "*Adult Learning in Modern Societies"* (Kilpi-Jakonen et al., 2014 p.11) theories of cumulative advantage and status maintenance give a relatively pessimistic prediction with regards to the relationship between adult learning and social inequality, predicting that the educational and labour market trajectories are at best relatively stable. In this chapter, the focus is on how participation opportunities are distributed within the population and across individuals' life courses. Adult learning is divided between formal and non-formal learning, and within non-formal learning, between certified and non-certified learning as well as between employer-sponsored and self-sponsored learning.

Adult education can offer individuals with lower levels of education the opportunity to acquire the knowledge and competences necessary to gain employment, or to move into more secure labour market positions (Kilpi-Jakonen et al. 2012). For this reason this chapter also looks at the difference between obtaining an educational upgrade (a higher level qualification) and side-stepping (obtaining a qualification at the same level or below) in the UK, as prior research has shown that an educational upgrade and to some extent a side-step can help individuals to move into employment and non-precarious work, however this is somewhat conditional on being employed while studying, particularly for men (Vono de Vilhena et al. 2016). Overall a comprehensive picture of the factors that determine the educational pathways and trajectories individuals are able to take in their mid-life careers is presented.

TYPES OF ADULT EDUCATION: FORMAL EDUCATION AND NON-FORMAL ADULT LEARNING

According to the European Commission, lifelong learning is related to: "(…) all learning activities undertaken throughout life, with the aim of improving knowledge, skills and competencies within a personal, civic, social and/or employment-related perspective" (Eurostat 2006). This definition is difficult to operationalise, therefore this definition was restricted to "all learning activities as an adult related to the labour market" (Kilpi-Jakonen, Vono de Vilhena & Kosyakova 2012). This is referred to as "adult learning" rather than "lifelong learning" even though these concepts are often used synonymously. Adult learning can be further subdivided into formal education and non-formal adult learning. Formal education refers to a learning activity, which occurs in a specific form of organisation with

hierarchical stratification, division of labour, goal directedness, and societal function. It also leads to recognised certificates or diplomas that function as signals for employers and, therefore, strongly determine labour market chances (Bäumer et al. 2011; Eurydice 2011; Kleinert & Matthes 2009).

Non-formal adult learning refers to training that can take place either internally (on the job) or externally (at learning centres or other facilities outside the workplace). This type of adult learning includes shorter institutionalised training courses that do not lead to accreditation or that lead to certificates that are not fully recognised (Kleinert & Matthes 2009). One important distinction here is that education takes place in a formal setting and may be organised in an official way (i.e. via employers through accredited teachers) but does not lead to official transferable accreditation (Kilpi-Jakonen, Vono de Vilhena & Kosyakova 2012).

For the UK, formal adult education refers to a qualification obtained within the National Qualification Framework (NQF). The specification of non-formal adult learning includes receiving a new qualification that is not on the standard list of qualifications included in the BHPS questionnaire. These other professional, technical, or higher-level qualifications cannot be classified under the NQF. This type of qualification is referred to as certified non-formal adult learning. Based on the descriptive analyses, certified non-formal adult learning is often employer sponsored, with a substantial amount also taking place in private training centres and in colleges of higher or further education (particularly if the respondent is unemployed). Training for these qualifications is typically of quite short duration, often lasting less than one week when converted into working weeks.

SIDE-STEPPING AND UPGRADING

In the UK, adults who obtain an educational upgrade tend to have low to medium education levels (Kilpi-Jakonen et al. 2012). For individuals investment in transferable skills with formal education can be used to negotiate better employment opportunities for those outside the labour market or who are considering a potential career move (Vono de Vilhena et al. 2016). Adult learning can signal employee motivation and thus have a positive impact on the transition to employment or better employment positions. Educational upgraders are defined as ‘people who at a mature age gain a qualification that is higher than their previous qualification’ (Kilpi-Jakonen et al. 2012, p. 49). This group is considered of crucial importance in terms of social inequality due to the fact that the attained level of formal

education is a major determinant of labour market chances in general (e.g Shavit and Muller 1998).

Side-steppers are individuals who obtained a new qualification at the same level or lower compared to their initial qualification (Vono de Vilhena et al. 2016). One possible reason an individual may invest in this type of education is to adjust their career path or change it entirely. There may be several motivations for this, some related to career progression and others related to job satisfaction and wellbeing. For this reason sidesteppers can be considered a very different group in terms of educational inequality than those who undertake the task of upgrading. In terms of social mobility, they may be willing to re-enter the labour market at a more junior position in order to accommodate their change in trajectory. To sum-up prior results for the UK on the impact of a side-step and upgrade on career progression, both types increase the likelihood of moving into non-precarious employment, though the results were slightly stronger for educational upgrades (Vono de Vilhena et al. 2016).

ADULT LEARNING IN THE UNITED KINGDOM

Most formal adult education takes place in colleges of further education and in universities. Newer universities are incentivised to offer flexible study arrangements that appeal to adult learners, therefore while overall the share of non-traditional entrants to universities has increased, adult learners may be concentrated in less prestigious courses with lower signalling power. Vocationally orientated courses may also be attractive to adult learners with the lowest levels of qualification as these courses are often directly related to occupationally specific skills and includes apprenticeships. The educational system is relatively open when it comes to adult learning. Boundaries between secondary- and tertiary-level studies are blurred due to the fact that study at the two levels can take place in the same institution, and entry requirements have been widened in order to accommodate those who do not meet the traditional entry conditions (see Eurydice 2003).

The UK educational system can generally be characterised as relatively unstratified and unstandardised (Shavit & Müller 1998). Efforts to increase standardisation in the UK educational system include the development of a centralised National Qualifications Framework (NQF), through which all types of qualifications can be approved and classified (described in Chapter 2 of this thesis). For the purpose of this study, whether or not a

qualification can be classified within the NQF represents the dividing line between formal and non-formal adult learning.[36]

Certified training that is not included in the NQF tends to be of relatively short duration and is often sponsored by employers (own analyses from BHPS). Overall, employers are a major provider and sponsor of adult learning in the UK. One of the reasons for this is the low vocational specificity of the UK educational system, which means that employers need to invest in the training of new employees, particularly if these employees have recently left the educational system (Scherer 2005). Moreover, there have been multiple interventions on the part of the state aimed at encouraging employers to invest further in the skills of their employees. These interventions include the "New Deal" programs introduced under New Labour as well as regulations that give young workers the right to take time off to participate in adult learning under the "Teaching and Higher Education Act 1998" (Eurydice 2003).

On the other hand, the low level of employment protection in the UK means that labour market turnover is high (Sørensen & Tuma 1981). This means that employers may be put off from investing heavily in their employees due to their fear of poaching from competing firms. At the individual level, low employment protection and relatively low levels of welfare benefits give individuals incentives to invest in their own job-related skills in order to remain competitive in the labour market.

PATTERNS OF PARTICIPATION IN DIFFERENT FORMS OF ADULT LEARNING IN THE UK

Despite the various institutional reasons that lead to an expectation of relatively high levels of adult learning in the UK, it is also expected that there are likely to be differences in which groups find participation the easiest and most beneficial. The relatively general nature of second level education as well as the openness of higher-level institutions to individuals who do not fulfil traditional entry requirements would lead to an expectation that educational differentials in entry to formal education should be relatively small. This suspicion is also supported by the generally higher opportunity costs for the higher educated to take part in time-intensive formal education. On the other hand, it is necessary to recognise that the lower educated may face dispositional barriers to re-entering formal education institutions

36. This also means that the dividing line between formal and non-formal adult learning in our study differs slightly from that of other studies, e.g., those using the Adult Education Survey.

(Rubenson & Desjardins 2009). Moreover, although opportunity costs may be lower for the lower educated, the absolute costs of formal courses may also be a barrier to entry.

The costs of formal education may also make it more attractive to employees who can get their employers to pay their fees and support them during their (part-time) studies. Employers, on the other hand, are likely to have greater incentives to sponsor the studies of those employees from whom they can expect greater productivity increases, which in general applies to those who are already medium to highly skilled. Numerous studies have observed a positive relationship between educational attainment and the probability of participating in work-related training programs and in training sponsored by employers (Dieckhoff, Jungblut, & O`Connell 2007; Pallas 2004). Therefore, employers' preferences to train the highly skilled in the UK context are expected to affect the educational stratification not only of employer-sponsored non-formal learning but also of formal education.

Employers' incentives to invest in the training of their employees are also higher for younger employees due to the low level of vocational specificity in the educational system. This can also be the case when individuals begin a new job (Cheung & McKay 2010) and after an employment interruption, e.g., women when they return to work after childbearing. Gendered perceptions of parenthood have been found to give rise to a "motherhood penalty." It is additionally possible that these perceptions similarly influence the willingness of employers to invest in training opportunities for women (Dieckhoff & Steiber 2011). The quality and duration of the training may therefore be an issue with regard to career interruptions and this is tested by comparing if men train for longer.

Due to the generally high incentives for individuals to invest in adult learning in the UK, it can be expected that the groups that are most overlooked by employers have higher probabilities of taking part in other types of adult learning – most notably non-formal learning that is not employer sponsored as well as formal education (to some extent). These groups include women, the non-employed, older individuals, and the lower educated.

Previous research has found that those with already high levels of education are more likely to earn new qualifications as adults (Jenkins et al. 2003) and to participate in work-related training (Cheung & McKay 2010). Research using the BHPS has found that individuals with no qualifications in 1991 were significantly less likely to take on additional training in the future (Blanden et al. 2009). Additionally, research using the NCDS found that men have a substantially higher probability than women of undertaking training in both employer-sponsored and work-related training, leading to a formal vocational qualification (Blundell, Dearden & Meghir 1996). Research linked to the *edu*LIFE project finds that when

it comes to employment probabilities, adult upgraders in the UK are not disadvantaged compared to early graduates, and the most advantaged group are women who were not employed during their studies (Kilpi-Jakonen et al. 2012). The measurement of adult education is a change in the highest level of education that is reported at the age of 26 or above. The results indicate that the effect of education follows a curvilinear pattern and are relatively similar for men and women.

DATA AND METHODS

The dataset used in this study is the nationally representative sample of 5,505 British households collected as the original sample of the British Household Panel Study (BHPS). The BHPS is a longitudinal panel study consisting of 18 waves that began in 1991 and ended in 2008/2009.[37] This chapter focuses on data collected over the years 1998-2008 (waves 8-18 of the BHPS) since the inclusion of additional questions on training from wave 8 onward makes it possible to distinguish between employer-sponsored and unsponsored non-formal training. multilevel random effect logistic regression models, in which observations are nested within individuals is used to examine the factors influencing participation in adult learning.

In order to ensure that only capture learning events that take place after the completion of initial education are captured, the sample excludes individuals studying for qualifications within the "normal age range." defined using OECD statistics on the normal age at which specific levels of qualifications are obtained and allow for an additional two years of studying (OECD 2002). For example, the age at which first degrees are normally obtained in the UK is 21. Therefore, individuals who gain these qualifications up to the age of 23 are excluded from the sample until they have graduated. In addition, the retirement age is used as the cut-off at the other end, excluding women at age 60 and above and men at age 65 and above. In some analyses, the sample is further restricted to include only those in employment.

The study differentiates between formal adult education and non-formal adult learning. For formal adult education, enrolment patterns in adult education are examined, rather than educational attainment. This gives a clearer idea of the factors that lead adults to begin formal education and (particularly with regard to labour force participation) gives a more accurate picture than does looking at the situation immediately before graduation.

37. The BHPS was incorporated into 'Understanding Society' from the second wave of interviews onward. For more information, see: https://www.understandingsociety.ac.uk

The specification of non-formal adult learning includes receiving a new qualification that is not on the standard list of qualifications covered in the BHPS questionnaire. These other professional, technical, or higher-level qualifications cannot be classified under the National Qualifications Framework. This type of qualification as is referred to as certified non-formal adult learning. Based on the descriptive analyses, certified non-formal adult learning is often employer sponsored, located most often in an employee's previous or current workplace[38], with a substantial amount also taking place in employer or private training centres and in colleges of higher or further education (particularly if the respondent is unemployed). Training for these qualifications is typically of quite short duration, often lasting less than one week when converted into working weeks.

An additional type of non-formal adult learning analysed here is training that does not lead to a qualification. This category is broken down between learning that takes place internally (employer sponsored and/or located at the workplace or employer's training centre) and externally (not sponsored by the employer but with the purpose of improving job skills either for current or future positions). Non-formal adult learning can also be divided by training intensity with shorter spells of less than one week and longer spells greater than one week examined.

Educational upgrading refers to those who obtained an educational qualification that is higher in the following wave, while side-steppers include individuals who have obtained an additional qualification at the same level or lower compared to their initial qualification in the following wave, as discussed above.

Men and women are modelled separately, and independent variables include age, age squared, previous educational attainment (highest level of educational attainment), marital status, age of youngest child in the household, household income, year (wave) labour force status, occupational class, firm size, full-time vs. part-time job, permanent vs. short-term contract, job experience, and finally branch of industry (based on a modified version of Singelmann 1978 classification), collapsing transformative and distributive industries, personal service and producer service industries, and transport and communicative industries (Schmelzer 2008). Employed individuals are those who did paid work the previous week, including those who had a job in the previous week despite being away from it. Unemployment is based on an individual's self-definition and not being in paid work the previous week.

38. See Figure C5.1 in Appendix C.

The second stage was to examine the returns to adult learning using both discrete time event history analysis for repeated events (multilevel random effects logistic regression models) and fixed effects linear regression models. The outcomes are upward and downward prestige mobility for the first analysis and the absolute level of prestige for the second analysis. For formal adult education, a distinction is made between obtaining a new degree, a new tertiary diploma, a qualification equivalent to an A-level, and lower secondary qualifications. For these analyses, the data can be extended to include waves 1-7. Depending on the model, either a measure of ever having completed adult learning (as observed during the survey) or a set of lagged adult learning variables are used. Missing information in the lags was controlled for by taking into account missing waves and item non-response for the adult-learning variables.

RESULTS

Descriptive Analysis: Participation Rates in Formal and Non-Formal Adult Learning.

Figures 5.1, 5.2 and 5.3 illustrate patterns of participation in adult learning by age group and gender. Women and men exhibit very different patterns of sidestepping and upgrading (Figure 5.1). Men generally obtain their highest level of education early in their career, while women appear to upgrade their education mid-career. Women are also more likely to obtain a qualification at the same level or below, possibly reflecting a response to childbearing. It may also be the case that women are found in this type of training more often because female dominated sectors of employment (for example: teaching and nursing) tend to require their employees to participate in regular (re)training programs.

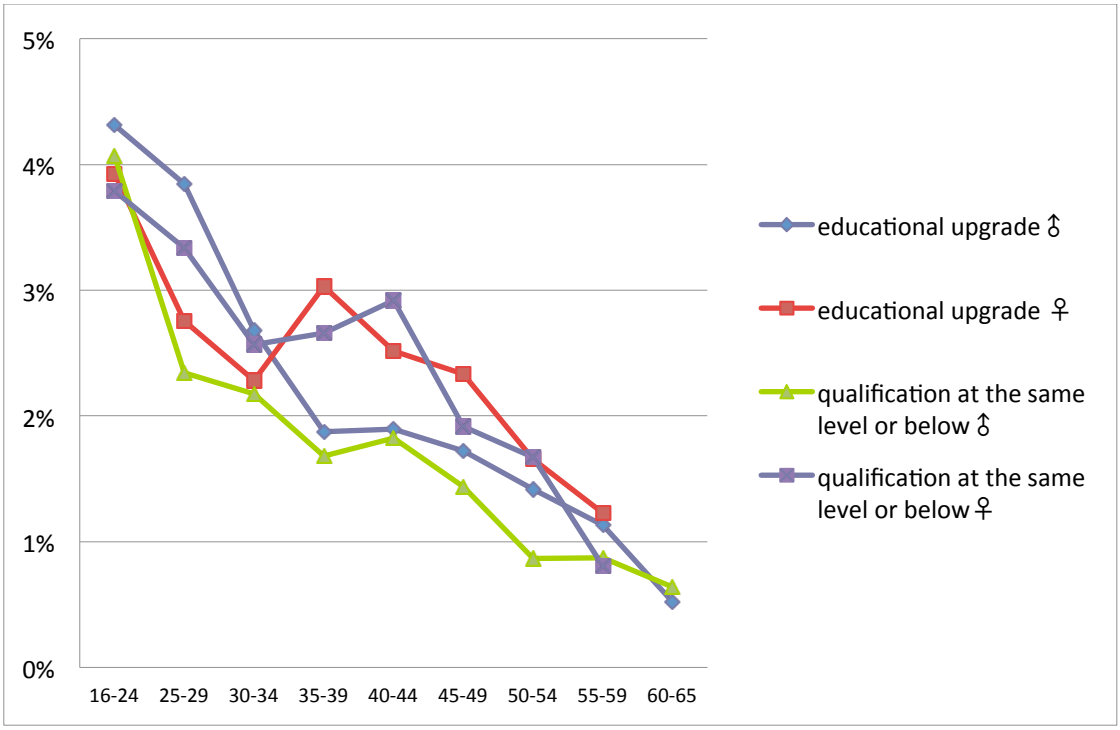

Figure 5.1 Proportion of adult learners within age range in the UK by type of adult learning

Source: Own calculations using the BHPS

Both men and women participate more in non-formal internal training that does not lead to a qualification than in either formal adult education or certified non-formal adult learning (Figure 5.2). While female participation in non-formal internal adult learning is greater than male participation in the early and late stages of the life course, women participate less in non-formal internal adult education than men over the main childbearing years.

Also, while female participation in formal adult education sharply drops off after the age of 25, women still participate in formal adult education significantly more than men between the ages of 25-45. After 45, women participate less in formal adult education and more in employer sponsored internal training. These patterns suggest that both employer sponsored adult learning and formal adult education is moderated by gender and reflects the interrupted career pattern of females

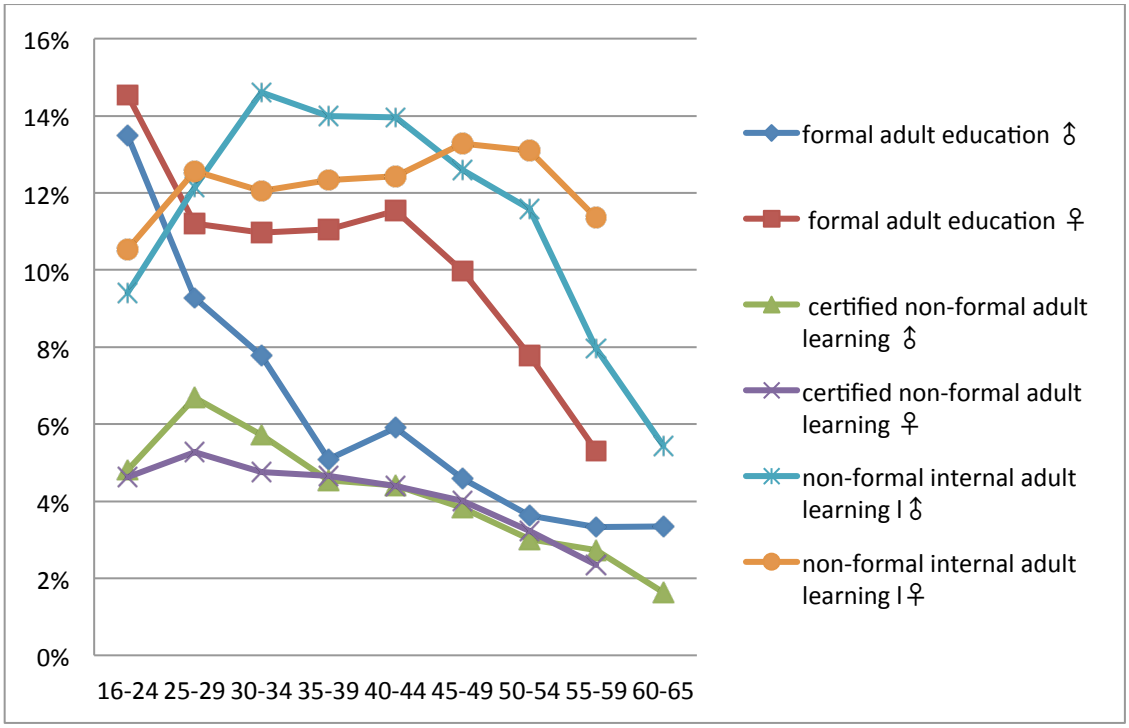

Figure 5.2 Proportion of adult learners within age range in the UK by type of adult learning

Source: Own calculations using the BHPS

For certified non-formal adult learning, male participation increases until it peaks at age 25 and steadily declines. Female participation in certified non-formal learning is lower and the curve gentler until the age of approximately 32 where female participation matches male participation. The curve for non-formal external adult training is relatively flat at approximately 2% for both women and men (not shown). Men are more likely to participate in non-formal internal training of a longer duration (Figure 5.3), while there is little difference between genders in non-formal external training intensity

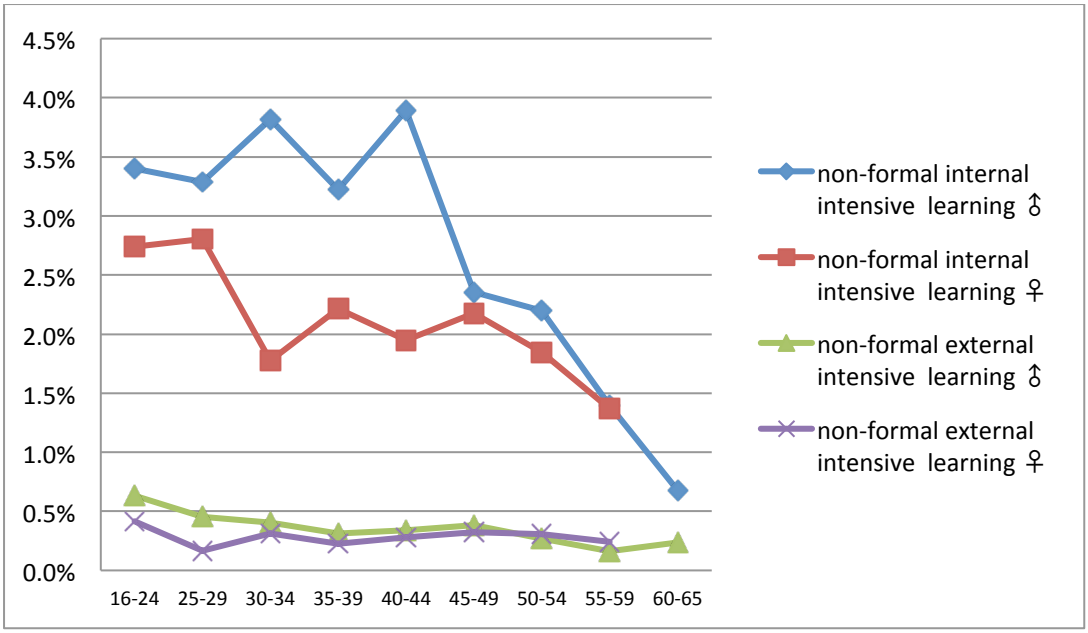

Figure 5.3 Proportion of adult learners within age range in the UK by type of adult learning

Source: Own calculations using the BHPS

Patterns of Participation: Upgrading and Sidestepping

In Table 5.1, the factors influencing an educational upgrade or a sidestep are presented. Both genders are equally likely to obtain an upgrade, with women more likely to obtain an educational qualification of the same level or below. Also both genders are influenced by labour force status with those outside the labour market more likely to sidestep. Women show on average 1.48 higher rates of sidestepping if unemployed and 1.20 higher rates of sidestepping if outside the labour force[39]. Unemployed women and women outside the labour force appear less likely to upgrade. The tendency to upgrade or side-step decreases with age, however the association is positive and curvilinear for women, with men exhibiting a sharp decline in participation early on.

The role of education does not vary by gender and indicates that those with mid- and lower level qualifications are most likely to upgrade, those with higher levels of education obtain qualifications at the same level.

Family status has a negative impact for both genders (stronger for women when the children are younger than 1 year), and a positive influence on obtaining a sidestep when children are older than four . For employed individuals (Table 5.2) having children under the age of one impacts negatively on both an upgrade (extending until the age of 3) or a sidestep for women. Routine non-manual workers, personal service workers and semi-unskilled

39. Results expressed as odds ratios not shown but available from the author on request.

manual workers have lower odds of upgrading(for both genders), while men in lower manual positions have higher odds of obtaining a qualification at the same level.

Table 5.1 Probability of obtaining an educational upgrade and sidestep in the next wave in the United Kingdom (results as log odds ratios, observations nested within individuals)

	educational upgrade		same qualification or lower(sidestep)	
	Women	Men	Women	Men
Female (from model with both genders)	0.006		0.381***	
Age	0.045***	0.009	-0.008	-0.084***
Age squared	-0.002***	-0.001***	-0.000	0.001**
Labour force status (ref. employed, incl. self-employed)				
Unemployed	-0.498***	0.115	0.394**	0.723***
Outside	-0.163**	0.203	0.185**	0.417**
Highest education level (ref. first degree)				
Postgraduate degree			0.712***	0.359
Teaching qualification	0.311	0.084	0.275	0.502
Other tertiary qualification	0.161	-0.287	0.208*	0.294**
A-level and equivalent	2.109***	2.130***	-0.065	-0.041
GCSE and equivalent	2.024***	1.932***	-0.835***	-0.902***
Other secondary	1.775***	1.853***	-1.732***	-2.417***
Other	2.004***	1.721***	-1.912**	-2.417**
None	1.647***	1.637***	-5.095***	-5.415***
Age of youngest child in household (ref. no children)				
Under 1	-0.661***	-0.091	-1.167***	-0.405**
Between 1 and 3	-0.323***	-0.203*	-0.110	-0.072
4 and over	0.091	-0.238***	0.274***	0.178*
Log household income	0.017	0.047	-0.073	-0.134**
Constant	-5.888***	-5.538***	-2.630***	-1.547**
Observations	48,830	46,015	50,007	47,536
Number of pid	5,394	5,348	5,477	5,477

Note: Waves 1-18, also controlling for marital status. *** p<0.01, ** p<0.05, * p<0.1

Source: Own calculations using the BHPS

Table 5.2 Probability of an educational upgrade or sidestep in the next wave in the United Kingdom for the employed population only (results as log odds ratios, observations nested within individuals)

	educational upgrade	educational upgrade	qualification at same level (side-step)	qualification at same level (side-step)
	Women	Men	Women	Men
Female (from model with both genders)	-0.073		0.267***	
Age	0.014	0.007	-0.006	-0.081***
Age squared	-0.001*	-0.001*	-0.000	0.001*
Age of youngest child in household (ref. no children)				
Under 1	-0.710**	-0.095	-1.726***	-0.603*
Between 1 and 3	-0.376*	-0.107	-0.307	0.023
4 and over	-0.049	-0.275**	0.086	0.050
Social class (ref. higher professionals)				
Lower professionals	-0.184	-0.052	-0.224	0.406*
Routine non-manual employees	-0.543***	-0.747***	0.150	0.299
Personal service employees	-0.358*	-1.086**	0.161	0.679*
Self-employed	-16.658	-13.579	-16.837	-19.512
Farmers	-17.025	0.193	1.618	-17.573
Foremen and technicians	-0.433	0.131	0.147	1.270***
Skilled manual	-0.447	-0.367*	0.216	0.852***
Semi- and unskilled manual	-0.541**	-0.405**	0.313	0.903***
Firm size (ref. 50 and fewer)				
50-250	0.115	0.135	0.032	-0.086
250+	-0.056	0.139	-0.001	0.211
Part-time (ref. full-time 30 and more)	0.052	0.373	0.154	0.490*
Fixed term contract (ref. permanent)	0.039	0.385	-0.159	0.104
Log of job experience	-0.069	0.026	-0.136**	-0.088
Constant	-5.430***	-4.398***	-1.909	-5.196***
Observations	18,667	18,057	19,271	18,856
Number of individuals	3,407	3,180	3,498	3,303

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 Waves 8-18. Controlling for highest education, marital status, household income, industry

Source: Own calculations using the BHPS

Patterns of Participation in Adult Learning: Formal and Non-Formal Adult Learning

The results of enrolment in formal and participation in non-formal adult learning are presented separately for the general and employed populations (Tables 5.3 and 5.4 respectively). Moreover, I only focus on certified adult learning and internal training for the employed as these are the most relevant types of adult learning for the employed.

Gender and labour force status shape the type of learning that individuals participate in as they have differential effects on the different types of adult learning. Women are more likely to enter formal adult education and to participate in external training, whereas amongst the employed there is no gender difference for certified non-formal learning and internal training. I find that the non-employed are more likely to enrol in formal adult education and undertake external training than the employed. Unemployed men are particularly likely in comparison to other groups to do external training. This supports the expectation that groups that may be overlooked by employers have higher probabilities of taking part in other types of adult learning.

On the other hand, the effect of education level is surprisingly similar across the different types of adult learning: the more highly educated are more likely to participate everywhere, with possibly slightly stronger differences in internal and external training that in the two certified types of learning. Both Men and women having a qualification below GCSE level and equivalent having decreased odds of participating (approximately .14 for men and .18 for women with no qualifications). In this sense a "Matthew effect" is evident in all types of adult learning. For internal training this is further enhanced by the unequal distribution of participation by occupational class, where the manual workers are less likely to participate than non-manual employees. For women there is also a separation within the non-manual employees. For certified non-formal learning, the groups least likely to participate are the routine non-manual and personal service employees.

The effect of age varies by gender and type of learning. In some cases age does not have a statistically significant effect, whereas in others the effect is curvilinear: first increasing and the decreasing. The latter is the case for entry into formal education for women and internal and external training for men.

Children do not seem to affect men but have a large effect for women for enrolment in formal and non-formal qualifications. Higher household income increases internal training for both men and women but reduces enrolment in formal education for women. For the

employed, children under the age of one increase the probability of participation in certified non-formal learning for men and decrease the probability of female participation.

Table 5.3 Enrolment in formal adult education and participation in non-formal adult learning measured in the next wave in the United Kingdom (results as log odds ratios, observations nested within individuals)

	Enrolment in formal		Certified non-formal learning		Internal training		External training	
	women	men	women	men	women	men	women	men
Female (from model with both genders)	0.507***		-0.028		0.186***		0.186**	
Age	0.041***	-0.026*	0.014	-0.014	-0.007	0.037***	0.043	0.053**
Age squared	-0.001***	-0.000	-0.001***	-0.000	0.000	-0.001***	-0.001	-0.001**
Labour force status (ref. employed, incl. self-employed)								
Unemployed	0.283*	0.280	-0.310*	-0.340***	-0.827***	-1.239***	-0.077	1.239***
Outside	0.306***	0.765***	-0.337***	-0.600***	-2.325***	-2.227***	-0.644***	-0.420
Highest education (ref. first degree)								
Postgraduate degree	0.328**	-0.290	-0.111	-0.267	-0.007	-0.331*	-0.073	-0.167
Teaching qualification	0.248	-0.093	0.225	0.375*	0.371*	-0.404	0.604**	-0.297
Other tertiary qualification	-0.211**	-0.553***	-0.104	0.016	-0.384***	-0.529***	-0.403**	-0.570***
A-level and equivalent	-0.447***	-0.505***	-0.511***	-0.324***	-0.696***	-0.673***	-0.833***	-0.894***
GCSE and equivalent	-0.687***	-0.715***	-0.788***	-0.643***	-0.793***	-0.969***	-1.081***	-0.806***
Other secondary	-1.093***	-1.180***	-1.149***	-0.781***	-1.108***	-1.552***	-1.344***	-1.516***
Other	-1.775***	-0.185	-1.586***	-1.269**	-2.078***	-2.029***	-1.592	-0.174
None	-1.628***	-1.705***	-1.401***	-1.080***	-1.674***	-1.887***	-1.344***	-1.649***
Age of youngest child in household (ref. no children)								
Under 1	-0.562***	-0.163	-0.744***	0.165	-0.252**	0.135	0.101	-0.227
Between 1 and 3	-0.165*	-0.179	-0.223***	0.009	-0.019	-0.023	0.003	-0.054
4 and over	0.209***	-0.026	0.008	-0.091	-0.060	0.043	0.065	-0.117
Log household income	-0.077**	-0.014	0.020	-0.059*	0.361***	0.350***	0.126	0.058
Observations	27,471	27,774	50,036	47,583	31,188	29,290	31,186	29,286
Number of individuals	4,688	4,655	5,479	5,482	4,418	4,254	4,417	4,250

Notes: Waves 8-18 for all other models except certified non-formal learning waves 1-18. *** p<0.01, ** p<0.05, * p<0.1. Controlling for marital status

Source: Own calculations using the BHPS

Table 5.4 Participation in non-formal adult learning measured in the next wave in the United Kingdom for the employed population only (results as log odds ratios, observations nested within individuals

	Certified Non-formal learning		Internal training		Internal training greater than a week	
	women	men	women	men	women	men
Female (from model with both genders)	-0.079		-0.058		-0.284***	
Age	0.002	-0.027**	-0.031**	0.035**	-0.045*	0.014
Age squared	-0.000	-0.000	0.001***	-0.001***	0.001	-0.001
Age of youngest child in household (ref. no children)						
Under 1	-0.816***	0.232**	-0.171	0.137	-0.552*	-0.132
Between 1 and 3	-0.172	-0.002	0.136	-0.018	0.119	-0.092
4 and over	0.021	-0.080	0.038	0.026	-0.087	0.154
Social class (ref. higher professionals)						
Lower professionals	-0.134	-0.026	-0.102	0.029	-0.003	0.114
Routine non-manual employees	-0.385***	-0.367***	-0.279***	0.062	-0.288*	-0.150
Personal service employees	-0.230*	-0.751***	-0.432***	0.245	-0.279	0.286
Self-employed	-17.638	-14.731	-15.260	-14.987		
Famers	-17.582	-0.668	-0.461	-1.130		
Foremen and technicians	-0.013	0.269***	-0.705***	-0.200*	-0.495	0.098
Skilled manual	-0.319	-0.036	-0.650***	-0.479***	0.261	-0.319
Semi- and unskilled manual	-0.112	-0.055	-0.841***	-0.738***	-0.674**	-0.712***
Firm size (ref. 50 and fewer)						
50-250	0.005	0.041	0.149**	0.318***	0.449***	0.831***
250+	-0.151*	0.074	0.411***	0.436***	-0.474***	-0.018
Part-time (ref. full-time 30 and more)	-0.176**	-0.029	-0.245***	-0.270*	-0.092	-0.573*
Fixed term contract (ref. permanent)	0.081	0.198	-0.101	-0.454***	-0.116*	-0.114*
Log of job experience	-0.078**	-0.032	-0.088***	-0.024	-7.513***	-6.398***
Observations	33,043	32,181	21,113	20,608	18,971	18,562
Number of Individuals	4,516	4,403	3,603	3,417	3,446	3,261

Note: *** p<0.01, ** p<0.05, * p<0.1. waves 8-18 for internal training and waves 1-18 for certified non-formal learning, Controlling for highest education, marital status, household income, industry, Self-employed and farmers not included in intensive training models

Source: Own calculations using the BHPS

With regard to other employment characteristics, larger firms are more likely train people internally than small firms. Holding a fixed term contract reduces the probability of internal training for men. Working part-time reduces the probability of internal training for both genders and of participation in certified non-formal adult learning for women while higher levels of job experience reduce participation in both certified non-formal adult learning and internal training for women.

CONCLUSION

In conclusion, the study found that the most prevalent form of adult learning in the UK is non-formal employer-sponsored training, confirming the role of investment by employers in firm-specific skills as the main factor that influences adult learning in the UK. However, there is also a sizeable share of individuals participating in other types of adult learning, in particular formal adult education, suggesting that individuals are compelled to invest in their own skills in order to remain competitive in the labour market. This is substantiated by the finding that the non-employed are more likely to enrol in formal adult education and external training than the employed.

Besides employment, another key factor influencing participation in different types of adult learning is level of education. The more educated are more likely to participate in both formal and non-formal adult learning, supporting previous findings of a cumulative advantage in educational attainment in the adult life stage. This effect is slightly stronger for uncertified work-related training reflecting employers' propensity to maximise the efficiency of training by investing in employees with the highest levels of education and skill. Within the employed population this is compounded for both men and women by occupational level.

In contrast those with mid and low-levels of education are more likely to upgrade suggesting some equalizing effect, however this is counterbalanced by a greater propensity for the employed to upgrade. Overall the results indicate that upgrading may be more costly to mothers and those outside the labour market, while sidestepping is more common for these more marginalised groups. Further investigation into the outcomes of participation in adult education showed that adult learning tended to help labour market participants in marginal situations to improve their career perspectives slightly more than those who had already accessed non-precarious employment, although the results were slightly stronger for educational upgrades (Vono de Vilhena et al. 2016). This means that when individuals participate they do benefit.

Overall, the findings of the UK chapter supports the hypothesis that more highly educated individuals and those in better occupational positions are more likely to participate in non-formal adult education ("Matthew effect hypothesis"). This chapter does not support the hypothesis that those with medium levels of education and those in lower or less stable employment positions are more likely to participate in formal adult education ("Partial equalisation hypothesis").

As regards gender; this chapter partially supports the "gendered participation hypothesis", with women more likely to participate in formal adult education and unsponsored external training. Contrary to expectations men are generally not more likely to participate in internal training (see Kilpi-Jakonen et al. 2014 for more details). When the relationship is explored in more detail it is found that women are participating in non-formal internal training more than men before and after the peak childbearing years suggesting that employers are not necessarily unwilling to invest in the training of women. It's more likely that they are incentivised to invest in their most productive employees and new employees, however our findings also suggest that employers may be more willing to invest in training of a longer duration for men. Therefore as women typically enter the labour market with higher levels of education than men, women may have an initial advantage in internal training, before they reach childbearing age after which their productivity level potentially drops. During this time men receive more internal training.

The determinants analysis was followed up by a second stage of analysis examining the impact of adult learning on labour market outcomes with two major institutional factors that would lead to the expectation of relatively small effects of formal adult education on career progression in the UK. These are open employment structures and the low signalling power of qualifications. Open employment structures have to do with the fact that labour market mobility in the UK is high and happens as a consequence of a variety of factors, thus downplaying the role of education. This is further strengthened by the low signalling power of qualifications, which is largely due to the low level of educational stratification and the waves of reforms in the educational system (see Brauns et al., 1997).

Previous studies on formal education have found contrasting results. On the one hand, studies using the NCDS have not found that new qualifications increase wages (Jenkins et al., 2003; Silles, 2007). On the other hand, a study using the BHPS found that new qualifications increase earnings and prestige (Blanden et al., 2010). Positive results from formal education, particularly at the tertiary level, have also been found for employment opportunities (Jenkins

et al., 2003; Kilpi-Jakonen et al., 2012; Woodfield, 2011). In the second stage of this study[40] positive returns were found for formal adult education and few but mainly positive returns to non-formal adult learning (models not shown). One possible explanation as to why less returns to non-formal adult learning were found is that both prestige mobility and non-formal training occur simultaneously. In addition, fixed effect models show more positive returns than the event history models, suggesting that adult learning does not necessarily increase the chances of making large "mobility jumps" but that it does tend to increase occupational prestige at the individual level.

Further analysis investigating the role of adult learning defined as either a sidestep or as an upgrade focused on probability of making a transition to non-precarious employment (see Vono de Vilhena, D. et al., 2014). In the UK non-precarious employment were defined in terms of temporal and social aspects according to the type of employment contract an individual held (i.e. if it was of an indefinite duration) and in terms of organisational and economic aspects (if they were in jobs that were deemed full time with wages above working poor level)[41]. Regarding the first definition, upgrading positively influenced a move to non-precarious employment while no significant effect of sidestepping was observed (see table C5.7 in Appendix C). Upgrading also has a positive influence for those individuals who can be found in more precarious labour market positions[42] (particularly for the unemployed and those outside the labour force) while sidestepping also seems to help unemployed individuals. "These results tended to be confirmed with the fixed effects model, in short, both upgrading and side-stepping increased the chances of entering into non-precarious employment" (Vono de Vilhena et al 2016 p.10).Regarding the second definition of non-precarious employment, upgrading tended to increase the chances of entering better positions, while side-stepping did not appear to help (Model 4.1). Generally speaking however, both educational upgrades and educational side-steps can increase individuals' chances of moving into non-precarious employment in the UK.

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40 Results reported in McMullin and Kilp-Jakonen 2014

41 The definition of precariousness draws on Rodgers (1989) distinction between the temporal (degree of certainty over employment continuation), organisational(working conditions, intensity), economic(sufficient pay) and social(protection against unfair dismissal) aspects of employment(see Vono et al. 2016 for more details).

42 The dependent variable in all models was the probability of having a non-precarious job at time *t*. formal adult learning was measured in *t-1* or earlier during the observation period (H1 and H3). Interactions between formal adult learning in *t-1* (or earlier) and employment status in *t-1* were also included to test whether or not there was a positive effect of adult learning for those already in non-precarious employment in preventing a downward move and whether or not adult learning can be expected to increase the likelihood of accessing non-precarious employment regardless of whether or in a non-precarious position or not (Vono de Vilhena et al. 2016 p. 7).

Overall, there is convincing evidence of cumulative disadvantage as those with the lowest levels of qualification are the least likely to participate in adult learning of any kind. However once an individual invests in their own skills and for those whose skills employers invest in, better labour market chances were found; meaning that investment in adult education has the potential to compensate for earlier educational disadvantages if the least advantaged are able to overcome barriers to participation.

Further research in this area could explore how dispositional and institutional barriers to participation in formal adult education change over the life course. Another interesting avenue for future research would be the further exploration of the relationship between adult learning and the movement of individuals between (as well as within) firms and across types of occupation and sectors. This would be of particular use in exploring the career mobility of women who have more discontinuous career trajectories. Furthermore, in order to increase employability, adult learning could be used to lead to sectoral moves for workers in declining industries.

CONCLUSION

In conclusion, when Kerckhoff wrote "*Diverging pathways: Social structure and career deflections*" in 1993 he opened the door to understanding how (dis)advantages cumulate over transitions. He developed a theoretical bridge between the micro and the macro processes that shape individuals' lives by demonstrating how opportunity structures are shaped by institutions and how individual decisions in turn are shaped by these structures. Following from his work, this thesis aimed to examine how participation opportunities are distributed within the population and over individuals' educational careers in the UK since the move to a comprehensive system was completed, and how these opportunities are related to one another. This thesis is part of a European Research Grant (ERC) funded project "Education as a Lifelong Process - Comparing Educational Trajectories in Modern Societies" (*edu*LIFE), which aimed to study how individuals' educational careers and skill trajectories evolve regarding family background, educational institutions, workplaces, and private life events over the following four phases of the life course; early childhood education, transition to post-secondary education, transition to work, and education in adulthood. The three core theoretical questions of this thesis are:

1. What are educational pathways in flexible comprehensive systems and how do they change?
2. Do diverging pathways help explain vertical and horizontal gender differences at labour market entry?
3. What is the role of adult education in changing pathways?

In the following sections I address each of these questions in turn using evidence from empirical Chapters 3-5 as well as the arguments developed in Chapters 1 and 2. I present a section that looks at the implications of this research as well as possibilities for further work.

What are educational pathways in flexible comprehensive systems and how do they change?

In this thesis, pathways are much more malleable then tracks, with no fixed destination points. They can be formal or informal, and they can be shaped by the pressure of aggregated trajectories and the decisions of third party gatekeepers. One critical feature of pathways is that they can respond to demands for institutional change as well as pressure that builds up at

various transition points. In other words, pathways are the dynamic element of opportunity structures, which are to some extent driven by individuals' trajectories and expectations which are in turn defined by cumulated advantages and (dis)advantages over the life-course. As educational expansion puts pressure on individuals to obtain higher and higher levels of education, more alternative routes to higher-level education have been created, changing the opportunity structures and pathways that individuals can take. Increased diversification leads to different outcomes for those from higher and lower educated backgrounds and inequality is "effectively maintained" through horizontal differentiation. The more flexible a system, the more options individuals have and the more diverse trajectories are.

In Chapter 2 of this thesis educational pathways were outlined using the United Kingdom as an example, more specifically the consequences of the complexity of the system for educational inequality was discussed. Institutional differentiation, transition points and subject choice work together to form educational pathways. Several major reforms play a role; firstly, the move from a tripartite system to a comprehensive system in 1965, which aimed to reduce selectivity into "better" schools. However LEAs were allowed to opt out and the private sector was left untouched. Consequently not all schools are comprehensive in nature and this has important implications for educational inequality for British children. Secondly, the 1980s saw a rolling back of the comprehensive system parents were permitted to choose schools for their children. This was somewhat tempered by the introduction of league tables (although this was largely to encourage competition between schools) and a standardised curriculum. Finally the 90s saw the introduction of a large number of vocational options for young people at GCSE and A-level, further complicating the system.

These recent policy changes designed to introduce greater choice and competition have prompted a possible distinction of a marketised comprehensive system. As mentioned in Chapter 2, the idea of marketisation has been applied more often to higher levels of education as the more voluntary nature of education for adults means that the idea of education as a commodity rather than a public good may be more palatable. Nevertheless, a system defined by freedom of choice and competition with a large private sector can undermine the non-selective aspect of a traditional comprehensive. These changing aspects of the education system have formed different pathways to higher levels of education and individuals can adjust trajectories accordingly. For example, parents with greater financial resources may aim to send their children to private schools where once they would have attended a grammar school, thereby increasing demand for private school education.

Curriculum differentiation within schools is also important for understanding how individual trajectories form diverging pathways as students from different social backgrounds end up concentrating in different subjects. In Chapter 3 of this thesis it was found that the children of the lower educated took a greater share of vocational courses than the children of the highly educated (net of performance) and were less likely to pursue A-levels (the academic pathway crucial for university admittance). The children of the highly educated, however, were more likely to choose academic subjects, and critically, even if they took a large share of vocational courses were still entering A-level. In other words there is a compensatory effect of social origin on educational attainment.

One possible explanation is that parents who are highly educated may have a greater understanding of the pathways available in a flexible system and have the resources to take advantage, while children whose parents don't have direct knowledge of these pathways may find themselves at a loss when it comes to advising their children on the best course of action to take in order to reach their occupational goals. This means that the children of the lower educated are reliant almost entirely on the school for guidance and if the school is of low quality (with fewer curricular options) then there is the possibility they may be doubly disadvantaged when it comes to choosing the right subjects for prestigious courses at third level or in recognising the benefits of attending a more prestigious institution for further career prospects. Using fixed effect regression models, it was found that school factors and prior performance cannot completely overcome parental education when it comes to progression to A-levels (McMullin & Kulic forthcoming). This means that ultimately, your parents' experience of the education system and your individual choices can play an important role in determining your educational pathways in a relatively untracked system.

Do diverging pathways help explain vertical and horizontal gender differences at labour market entry?

As outlined above, pathways are dynamic and over time opportunity structures shift along with the horizontal dimension of stratification. This is demonstrated by looking at female educational careers and labour force participation over the last few decades of the 20th century. A subtle change in perspective from reserve labour force to more permanent members came about in response to concerns about the skill gap. With educational expansion and the introduction of maintenance grants, many more women were able to continue their education. These gains were especially strong in newer forms of education, particularly in

part-time courses (Halsey 2000). Essentially the opportunity structure for women changed, opening up new pathways.

Kerckhoff (1993) found that for the National Child Development Study (NCDS) cohort born in 1958 that women's educational trajectories for this generation are more reflective of so-called "traditional/academic trajectories" while the trajectories of men more often reflected the "non-traditional (non-academic)" path. By 1986 51% of tertiary students were female. In theory, more women should have gained access to third level and the advantage of better labour market positions after school completion. In terms of prestige level, they do[43], however they appear to always have done (see chapter 4). They should also have gained better positions in more prestigious institutions, however the traditional universities lagged behind in terms of female recruitment.

In addition, economic restructuring led to an increase in service-related occupations (traditionally seen as female-dominated) and a decline in production occupations (traditionally male-dominated) leading to increased female labour force participation. This, coupled with the movement toward contest mobility and in theory a later age of decision making (binding educational decisions at age 16 and influencing occupational choices), decreased gender segregation over time in Britain. However curriculum differentiation within schools means that self-segregation by gender at a younger age has not been completely eliminated.

Gender differences in subject choices at secondary and tertiary level are well-known (Jin et al. 2011; Jonsson 1999; Van De Werfhorst et al. 2003) . Using the LSYPE it was found in chapter 3 that girls and boys still separate along academic and vocational lines. Regarding the interaction between gender and class, boys from lower educated backgrounds take a higher proportion of vocational subjects, while boys from higher educated backgrounds who have medium levels of academic subjects are boosted into A-level, while the compensatory effect of parental education on A-level entry is stronger for girls with a medium level of vocational subjects. Both sexes start to part company early in their academic careers regarding what they study. Girls benefit when choosing more academic subjects as regards entry to university, but are then restricting their access to traditionally male dominated fields of study such as Science, Technology, Engineering and Math.

Overall Chapter 4 of this thesis finds that Britain's economic and educational structures have changed a great deal over the past several decades and it is important to consider how

43. However this is possibly due to the fact that service sector occupations are generally more prestigious than typically male dominated manual occupations.

these changes have influenced gender differences in the labour market. The findings suggest that despite pronounced institutional change, the picture with regard to vertical inequalities is one of relative stability. A reduction in horizontal gender differences has taken place, though differential educational pathways (in terms of whether or not a qualification is essentially vocational or academic in nature) seems to have had relatively little impact on this[44]. This does not account for field of study, however, and this merits further investigation[45].

What is the role of adult education in changing pathways?

For the United Kingdom, some of the groups overlooked by employers when it comes to on-the-job training have a higher likelihood of participating in other types of adult learning, partly because low levels of employment protection legislation means that labour market turnover in the UK is high. Employers can afford to hire individuals with more general skill levels as there are few consequences for them if a job mismatch occurs. At the same time, a comprehensive education system with low levels of standardisation at the post-compulsory stage means that certificates do not provide employers with accurate information about the skill level of potential employees. As a result employers must invest in occupationally-specific skills in order to increase the productivity of their workers. At the same time, welfare payments, while not as low as those in the US, still are low enough to encourage individuals to stay in the labour market. In short, state intervention and the low signalling power of credentials mean that employers are incentivised to invest in non-formal adult learning, However individuals outside the labour market are also compelled to invest in formal adult education in order to remain competitive.

Adult education has the potential to correct previous educational mistakes, or to alter pathways that were less productive in initial education. Further investment in formal education can allow individuals to progress in their careers or to move out of unemployment where otherwise they would have been blocked. However, life-course scholars have shown that rewards in later adulthood accumulate to those who follow traditional life course pathways. One way to investigate this is to look at the different types of investment in adult education by those in good labour market positions with stable career trajectories and those who are marginalised. As outlined in Chapter 5, whether a course is formal or non-formal, sponsored or non-sponsored, a side-step or an upgrade has important consequences for social inequalities.

44. See Chapter 4 for more details.
45. The BHPS did not collect subject choice over the period observed.

In addition, the changing trajectories of females after career interruption means that adult education can be used differently by both genders. Employers may be less likely to invest in female training as a result of low expectations with regard to the returns to such investment. On the other hand in order to increase the productivity of women already employed by the company, employers are incentivised to invest more in the training of women who interrupt. The quality and duration of the training may therefore be an issue with regard to career interruptions and Chapter 5 shows that men do tend to participate in employer sponsored non-formal training of a longer duration. This study also finds that women are more likely to enter formal adult education and to participate in external training generally, whereas amongst the employed there is no gender difference for certified non-formal learning and internal training. This finding is also supported by evidence from a cross-national perspective with women being less likely to participate in employer sponsored training overall but more likely to participate in non-employer sponsored training (Dämmrich et al. 2016).

Finally, as outlined in Chapter 5, another key factor influencing participation in different types of adult learning is level of education. This thesis finds that the highly educated are more likely to participate in formal and non-formal adult learning, in other words that there is a cumulative advantage in adult education. This is reflecting to some extent employers willingness to train the highly skilled. While occupational level compounds the effect for both genders. There is evidence of an equalising effect for those with mid-level qualifications as they are more likely to obtain an upgrade, however those who upgrade tend to already be in the labour market while more marginalised grounds (such as mothers and the unemployed) rely more heavily on side-stepping. Further investigation into the outcomes of participation in adult education showed that adult learning tended to help labour market participants in marginal situations to improve their career perspectives slightly more than those who had already accessed non-precarious employment (Vono de Vilhena et al. 2016). Previous studies have also shown that adult learning can improve employment probabilities as well as earnings and prestige mobility in the UK (Blanden et al. 2009; Jenkins et al. 2003; McMullin & Kilpi-Jakonen 2014). In short adult education has the potential to improve individuals life chances and to correct for previous educational mistakes.

THEORY AND POLICY IMPLICATIONS

Why are these findings important? The main theoretical contributions of this thesis are: (1) a discussion of the multiple dimensions of educational inequality in flexible comprehensive systems, which aims to contribute to the debate on persistent inequality in educational expansion, (2) a distinction between pathways and trajectories which can benefit further investigation into the interplay between micro and macro level processes in the reproduction of social inequality, and (3) an expansion of Alan Kerckhoff's work on diverging pathways by focusing more on the role of gender differences and adult education in diverging pathways in the UK. This thesis has been largely about the social context in which individuals are embedded; in other words, how do institutional settings in the UK shape individuals' life chances and how do individuals' choices in turn shape institutions? This is a fundamental part of sociological investigation. A distinction between pathways and trajectories allows for a more elaborate exploration of how flexible opportunity structures can be influenced by individuals and vice versa. The more adaptable and flexible the education system, the more pathways exist (both formal and informal), the more individualised the trajectories. Pallas identifies eight different ways in which educational pathways can structure educational trajectories, the most relevant to this thesis being *electivity*, and c*urriculum differentiation*. Electivity is defined as "*the greater a student's opportunity for choice, the more likely that the student's social background will structure his or her educational trajectories*" (Pallas 2003:169). This has been demonstrated throughout this thesis as particularly important for understanding persistent inequality in England.

Stratification holds within it an implicit reference to hierarchy, where individuals are sorted into ranked social strata dependent on their prior social positions. Sorensen (1970) outlines two different dimensions of organisational differentiation, vertical and horizontal. Horizontal differentiation within educational systems and labour markets create a more diverse opportunity structure leading to more within-cohort variation. This is important for social stratification if these diverse positions mean that individuals from different social backgrounds are sorted into better or worse pathways and educational inequality is effectively maintained in this way.

The third vital dimension to consider is timing - when individuals complete initial education, as well as whether or not individuals return to education later in life, is important for social inequalities. This thesis shows evidence that there are cumulating dimensions to educational inequalities, both in terms of time and also in terms of the relationship between

ascribed and acquired socio-demographic and academic characteristics. Horizontal differences play a major role both in cumulating (dis)advantaged over the life course and in relation to gender differences in the labour market. Cumulating dimensions can also be understood as interactions between different types of inequality. Gender and social class interact with one another meaning that a compensatory effect of a higher educated background on subject choice manifests differently for boys and girls.

Finally the English contribution presented in this thesis differs from Kerckhoff's work in that it explicitly analyses the role of school type after the introduction of the comprehensive system and the introduction of freedom of choice into the system, therefore a distinction can be made between the comprehensive system of the 60s and 70s in the UK and the 80s and 90s. The LSYPE cohort born in the 1990s move through a more individualised and market driven education system.

There are several policy implications of this thesis that have been mentioned previously which merit further discussion. Firstly, it is important to draw attention to the role of school type and curriculum differences in shaping young people's careers over time. This system values both the economic principles of equality and efficiency and has introduced several major reforms in order to improve both over the course of the 20th and 21st century. However, these reforms have also created a very complex system which places responsibility on the individual to navigate it correctly. This type of system runs the risk of assuming that access to information (and its interpretation) is equivalent for those from very different circumstances with very different life experiences. The first recommendation this thesis makes is that performance indicators should be required from all schools in the United Kingdom, regardless of whether they are privately or publicly run, as further analysis including independent schools would greatly benefit the understanding of institutional and curricular differentiation in England.

The second recommendation this thesis makes is that the number and scope of optional GCSE subjects a student can take should be limited. While a core curriculum and centralised examination system are important, too many elective options (and no limit to the number of subjects a student can take) means that students from different socio-economic backgrounds and boys and girls can separate into different educational pathways early, which has important implications for the reproduction of educational and gender related inequalities. In addition to this, it is also important that universities supply clear information (with particular attention paid to disadvantaged or poor performing schools) regarding their requirements for

entry into specialised courses in Year 9 when children are still relatively young and have not chosen their GCSE subjects.

At the time of writing this dissertation, changes have been made to the education system that have made it compulsory for young people aged between 16 and 18 years of age to be in some form of education or training, either full or part time. It is essential that the courses that individuals participate in aim to provide clear signals about the skills that students acquire on the job. It is not enough to ensure that no young individual is NEET but that the education and training that they do participate in provides a clear signal to employers regarding the individual's role and of a high enough quality to allow for further progression (either through on-the-job training in the labour market or back into the education system at a later stage). The Department for Business Innovation and Skills have recently published plans to reform vocational qualifications which aims to simplify the system and with the goal of providing clearer information to students by connecting different qualification databases. The aim is to develop key performance indicators for vocational education and to develop "the concept of career pathways, in which each step provides a basis for proceeding to the next level" (Hancock 2014, p.25)

Regarding adult learning, it is important to recognise that increasing participation does not necessarily lead to greater equalisation in liberal systems. There is clear evidence of a "Matthew effect" in non-formal adult learning, which is problematic for systems that rely on supporting employers in providing training for their workers rather than direct provision. Public policies should target those who are most likely to be marginalised from the labour market and therefore ineligible for employer sponsorship in a market based system – the least-educated, the unemployed, women and the old. (Blossfeld et al. 2014 p.340). Whether an individual is employer sponsored or self-sponsored is key in establishing the role that adult education plays in compensating for educational disadvantages acquired earlier in an educational career. In short, adult learning is potentially very powerful in changing educational pathways and correcting early mistakes, can lift constraints on labour market entry and increase both occupational prestige and wages. However, it is vital to examine not only formal adult education, but to analyse who is paying for it (as employers act as gate-keepers) and whether it is intended for upgrading or sidestepping – in other words, who is availing of it and under what circumstances.

LIMITATIONS AND FURTHER RESEARCH

What do these results suggest for further research? Firstly, this research must be extended back in time to examine the link between primary schools and secondary schools as well as the role of early childhood care and education in diverging pathways. Social gradients in cognitive development are visible from an early age (Cunha & Heckman 2007) and high-quality preschool programs for disadvantaged children produce substantial cognitive gains (Waldfogel, 2006). Kerckhoff, examining elementary school inequalities using the NCDS data, found that there were already clear structural effects, and that both infant school placement and the socio-economic status of students appeared to have biased the students ability group placements in junior schools[46]. The Effective Provision of Pre-School Education study (EPPE) and the Millennium Cohort Survey (MCS) provide high quality data on the role of early childhood care and education on cognitive and school related outcomes for those born in the first decade of the 21st century.

A short overview of EPPE study finds that disadvantaged children benefit significantly from high quality preschool, especially when they are with children from different social backgrounds. In addition, pre-school quality was significantly related to children's scores on standardised tests of reading and mathematics at age 6 and remained evident, although weaker, at age 7 (Sylva et al. 2004). Overall, high quality preschool provision combined with longer duration had the strongest effect on development. The quality and effectiveness of care on offer currently in the UK is uneven. Nursery schools and centres that combined both care and education as well as programs that had more qualified staff were generally most successful in boosting children from disadvantaged backgrounds (Sylva et al. 2004). This thesis can be extended to include this life-stage.

To the best of my knowledge, there are no later studies available that yet include all the same life-stages as the NCDS. The BHPS surveys adult (16+) members of a nationally representative sample; it does not follow younger individuals or collect life-time education histories as mentioned in Chapter 2. It was necessary to assume that the education individuals held when entering the BHPS is the education that they had at labour market (LM) entry. Work-life history files were constructed using the Mare files, for the younger members of the

46. State supported schools were divided into and infant only school and a combined infant and junior school. There was also a small proportion of private schools. In general about 1/3 of the cohort attended schools with no ability grouping, with private schools and combined schools less likely to separate students by ability.

sample. Some highly educated individuals may therefore be excluded because they have not yet had enough time to obtain a significant job before being interviewed. This is also likely to be the reason why in our sample of the most recent labour market entrants, women have not overtaken men in their education level. Therefore it is important that this study is followed up in a couple of years when the youngest members reach their mid-twenties in order to confirm if there is indeed parity of wages for this generation.

Additionally the BHPS does not go into detail with regard to student subject choice[47], therefore it was necessary to use the LSYPE to examine the relationship between curriculum selection and progression to A-level. The LSYPE sample was followed into early adult-hood (age approx. 23) and further research could investigate multiple pathways through vocational training and whether or not students who move out of education and into the labour force receive initial training that helps their further progression. The LSYPE has recently been continued and information on how individual careers have developed should become available in subsequent waves. The main benefit of this dataset is that it was linked to performance indicators of the school and therefore has an external measure of school quality, however this information was not available for a large proportion of private schools. It is likely therefore that the role of socio-economic status is under-estimated and although this comprises in total a small percentage of the UK population they are likely to be the most advantaged group (e.g. top performing students from highly educated backgrounds), driving our estimation of the role of social origin down, nevertheless our results already show that educational inequality is far from resolved.

Finally and most importantly, making a distinction between pathways and trajectories allows for several new ways to understand educational attainment. Other ways educational pathways can structure educational trajectories (described by Pallas but beyond the scope of this thesis) are: *specificity* – the degree to which the stratified location dictates access to future options; *mobility* – the likelihood of a student moving from a stratified location; *selectivity* – the degree of diversity or lack thereof in a stratified location; *stigma* – the extent of the impact that the stratified location will have on a student's identity, both personally and socially; *institutionalisation* – the extent to which the meaning of the student's stratified location is widely understood in a broader context and *scope*, which reflects how the stratified location impacts upon the entirety of the student's educational experience. Also,

47. The follow on study from the BHPS 'understanding society' is currently gathering data on subject choice.

other possibilities regarding further research include the elaboration of the mechanisms by which other measures of social origin may produce similar results; for example a social class explanation would be more rooted within the theoretical framework of relative risk aversion. It would also be of considerable interest to investigate whether or not the role of adult education has changed over cohorts.

OVERALL CONCLUSION

Kerckhoff's '*Diverging Pathways: Social Structure and Career Deflections*' was written in 1993 and used data that covered the UK's transition from a tripartite system to a comprehensive system. Since then there have been many changes made to this system and much more detailed information about school quality and type in the maintained sector, as well as the options students have within them, is available.

This thesis found that educational pathways in a flexible comprehensive education system changed through educational expansion, individuals' abilities to take advantage of qualitative differences and policy directives designed to support individualised choices. Young individuals from more educated backgrounds are more likely to choose academic subjects and pathways early, which influences their performance and further progression opportunities. This thesis also found that young men and women start to diverge from one another as early as age 14 when they make their first curricular choices and that this has the potential to at least partially explain horizontal and vertical gender differences in the labour market. In addition effects differ by social class. Boys from high-level educational backgrounds are more likely to be boosted into A-levels if they take medium levels of academic subjects, while girls from the same class are more likely to leave a vocational pathway with medium levels of vocational subjects. Finally it is of the utmost importance to examine the type of adult education that different groups of individuals can avail of and under what circumstances, in order to understand adult learning's true potential in equalising the playing field in later life. This thesis finds that adult learning follows a pattern of cumulative (dis)advantage with those in the best positions availing of employer sponsored training and upgrading.

Overall, I find that what is unique about the UK is that flexibility, hidden differentiation, a well-established private sector and the role of multiple reforms have led to a system that rests somewhere between one that is comprehensive on the one hand, and market driven on the other. This system is relatively standardised at the secondary level but includes

a complex and difficult to negotiate post-compulsory system with much blurring of transitions in vocational education. Traditional academic education in prestigious institutions, timely transitions and stable trajectories seems to still be given primary legitimacy over newer pathways through the education system, the consequences of which have yet to be fully explored. This thesis is perfectly placed to help address that gap.

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APPENDIX A. ADDITIONAL MATERIAL FOR CHAPTER 3

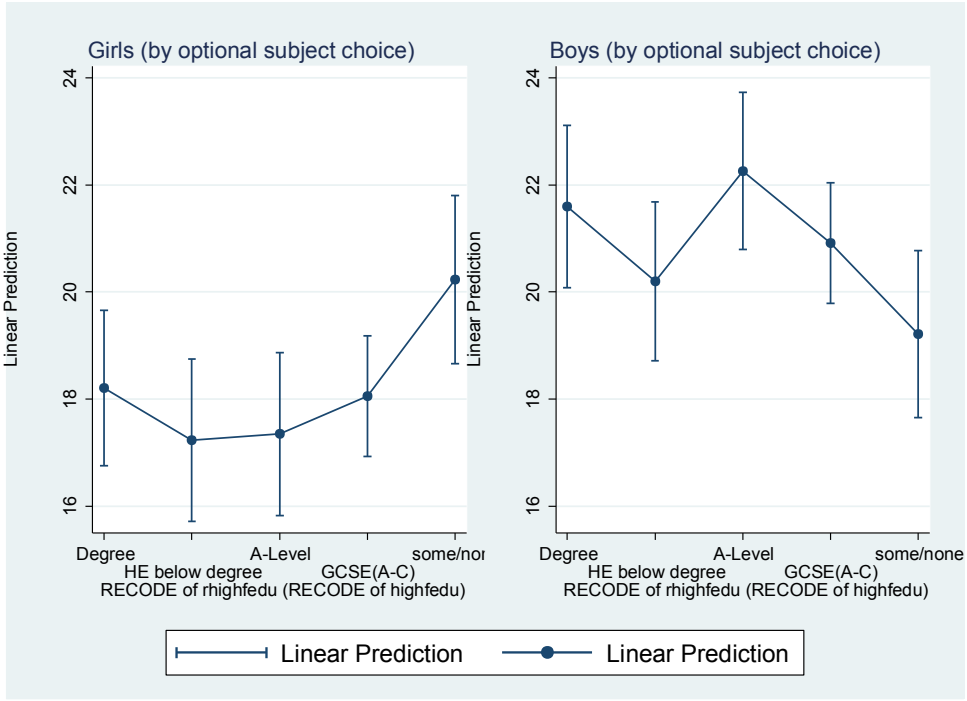


Figure A3.1 Average predicted probabilities of share of science subjects girls and boys take by parental education

Source: Own calculations using the LSYPE

Note: Weighted analyses. The models control for individual level variables and school fixed effects on the sample of observations.

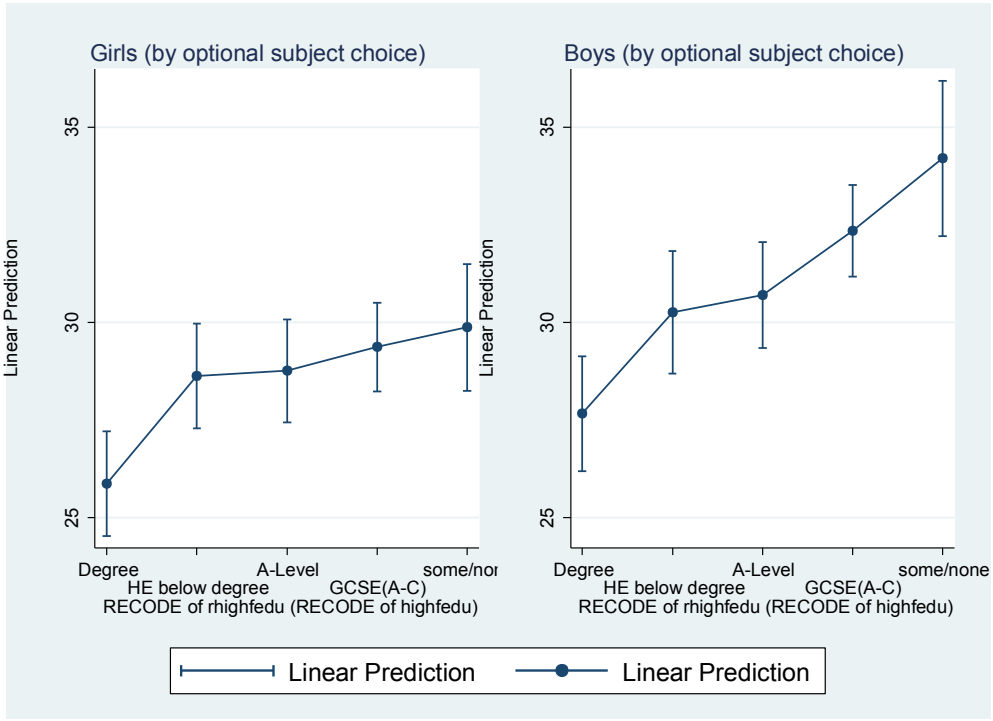


Figure A3.2 Average predicted probabilities of share of vocational and technical subjects girls and boys take by parental education, Own calculations using the LSYPE.

Note: Weighted analyses. The models control for individual level variables and school fixed effects on the sample of observations. For a simpler graphical presentation, the share of vocational subjects in quantiles is assumed to be continuous.

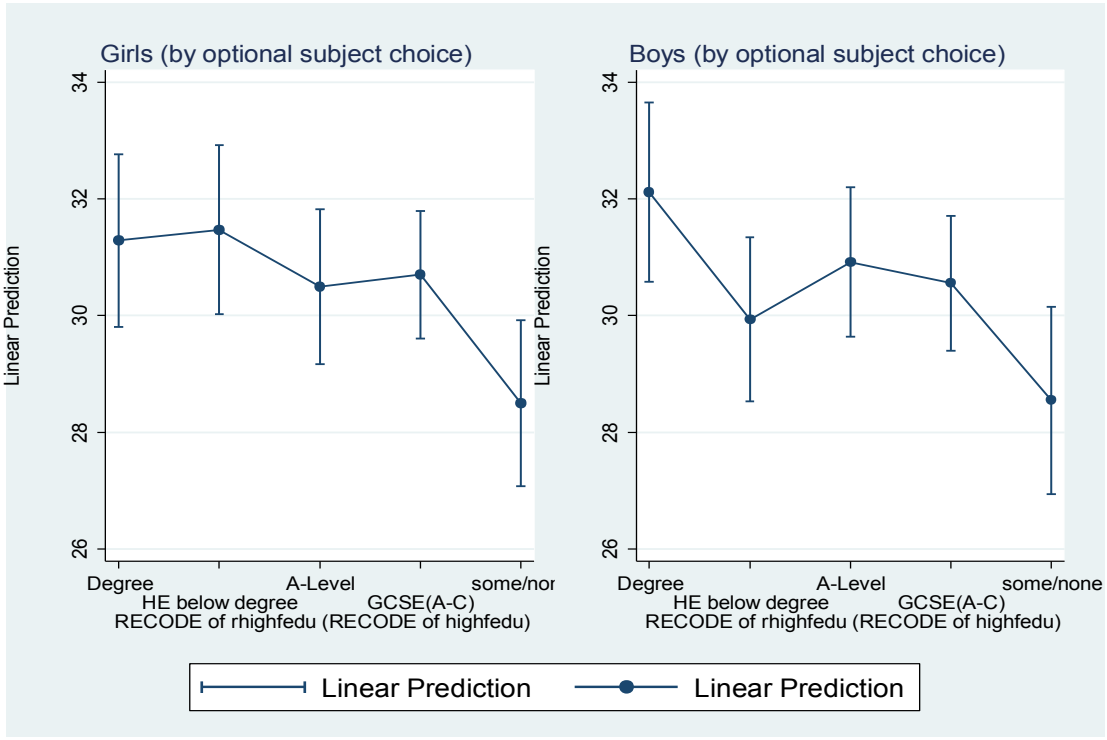


Figure A3.3 Average predicted probabilities of share of humanities and languages girls and boys take by parental education

Source: Author's own calculations from LSYPE

Note: Weighted analyses. The models control for individual level variables and school fixed effects on the sample of observations.

APPENDIX B. ADDITIONAL MATERIAL FOR CHAPTER 4

CHAPTER 4 PILOT – APRIL 2013

Dataset and limitations

The data used in this pilot study is the nationally representative sample of 5,505 British households collected as the original sample of the British Household Panel Study (BHPS).
In the BHPS the question relating to first occupation requires the assumption that the highest level of education was obtained before labour market (LM) entry. As this does not take into account adult education that took place after LM entry, it was decided to follow the youngest members of the panel to study education trajectories and LM entry.

Sample definition

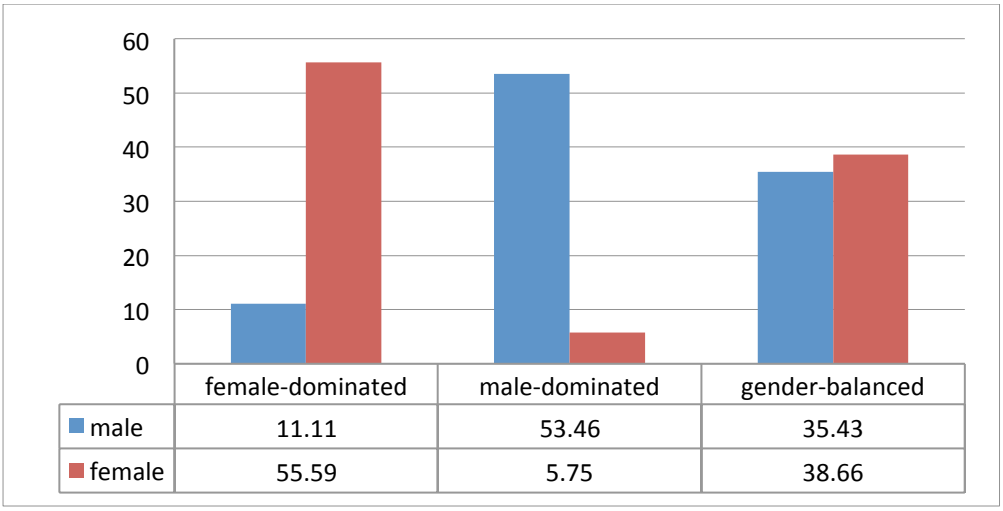
The dataset consists of 18 panel waves corresponding to the years 1991 to 2008/2009. Individuals aged between 16 and 18 years, who entered the study before wave 15 (2006) were defined as the youngest members of the BHPS. This captures individuals who have completed compulsory education but who have not yet entered the labour market.
2,387 individuals entered the BHPS as either 16 or 17 year-olds before 2006. A maximum of 1,682 individuals are present in any single wave, with a few hundred new entries in each wave. 2006 is taken as the final year of entry into the BHPS as individuals entering after this do not have sufficient time to progress to the LM.
Our sample at risk of LM entry within the young cohort are defined as those who had completed their initial education (i.e. those who are not attending education full time at the time of the survey), who are not between education spells and who hold a significant occupation using the Standard Occupational Classification 1990. Significant occupation is defined as an occupation that does not change between two panel waves. There are 158 different occupations and 1,265 individuals entering the labour market under these restrictions.

Dependent variables

For horizontal differences first significant occupation after labour market entry was divided into male-dominated – gender-balanced – female-dominated occupations. The dividing line

was taken as a 70/30 spilt between males and females in any given occupation. Occupations had to contain greater than 5 individuals in order to be included in the analysis. Additionally horizontal differences are to be examined using whether or not a person is in their own gender dominated group vs. all others. Prestige was taken as the dependent variable representing vertical inequalities.

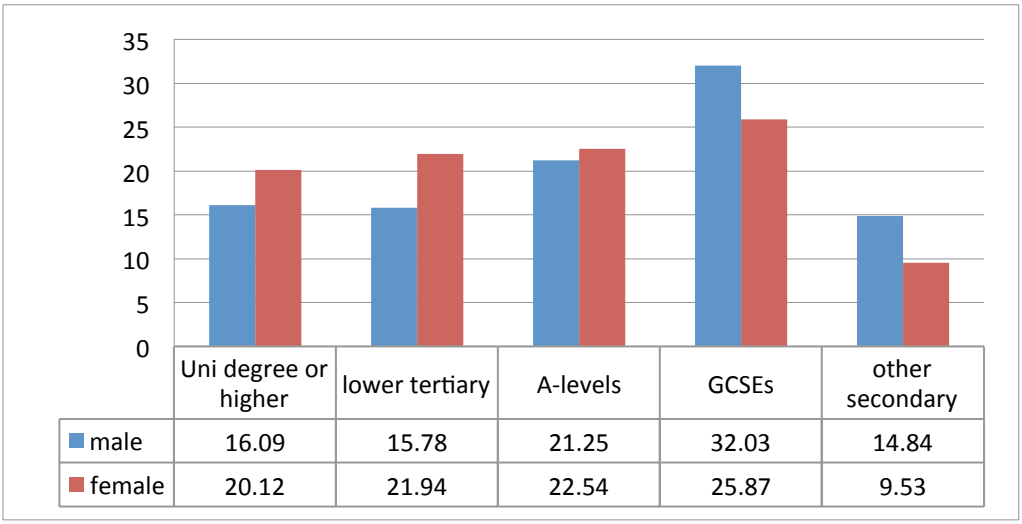
Descriptive analyses



	female-dominated	male-dominated	gender-balanced
male	11.11	53.46	35.43
female	55.59	5.75	38.66

Figure B4.1.Gender concentration of first occupation after labour market entry

Source: Author's own calculations from BHPS



	Uni degree or higher	lower tertiary	A-levels	GCSEs	other secondary
male	16.09	15.78	21.25	32.03	14.84
female	20.12	21.94	22.54	25.87	9.53

Figure B4.2 Gender distribution of youngest cohort with first signficant job by highest level of education %

Source: Author's own calculations from BHPS

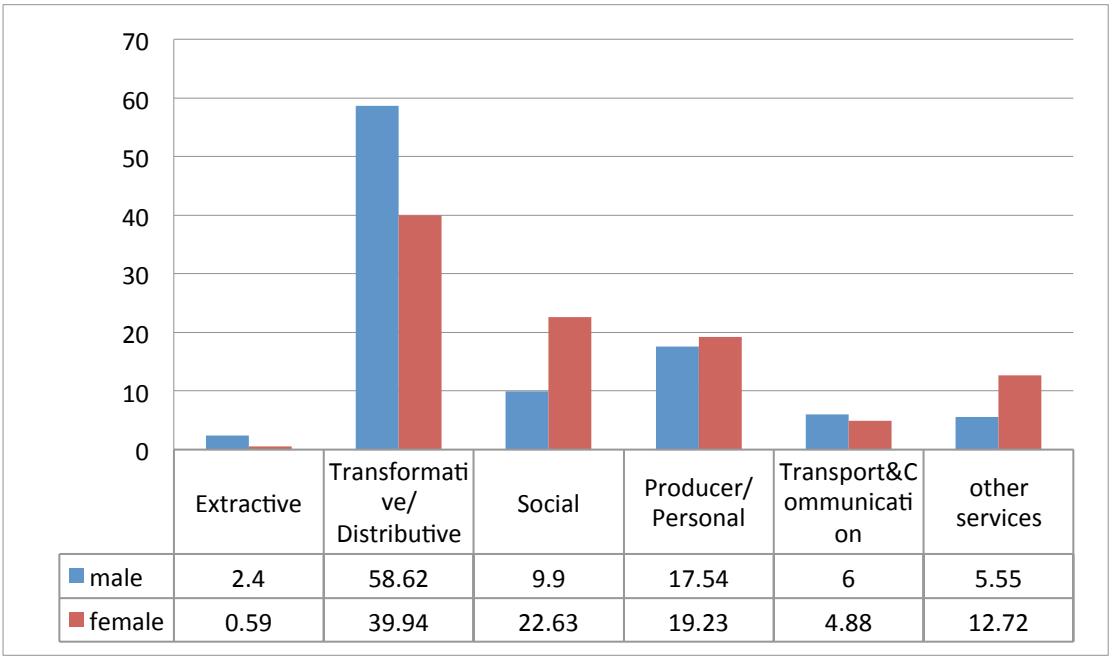


Figure B4.3 Gender distribution of youngest cohort with first signficant job by branch of industry % (Singlemann classification)

Source: Author's own calculations from BHPS

Multivariate analyses

Table B4.1 Likelihood of participation in gender concentrated occupation by gender and highest level of education (multinomial logit: reference category gender-balanced,results as log odds)

	Female-concentrated	*Male-concentrated*
Ref: Male		
Female	1.561***	-1.520***
Ref: University degree or higher		
Tertiary degree (Non-university level)	0.590**	0.130
Upper secondary degree (A-Levels)	0.066	-0.269
Lower secondary degree(GCSE)	-0.423*	-0.584
Other	-0.551	-1.961*
Ref: University degree or higher		
Female*Tertiary	-0.782	0.094
Female*A-Level	0.295	0.777
Female*GCSE	0.313	1.298**
Female*Other	0.601	3.072***
Ref: England		
Wales	-0.179	0.346
Scotland	-0.153	-0.057
Ref: In a Partnership		
Widowed/partnership ended	0.857	1.210
Never married	-0.296	-0.067
Ref: 2000-01		
1991-1993	0.077	0.404
1994-1997	0.576**	0.129
1998- 1999	0.314	-0.058
2002-2003	0.124	-0.234
2004-2005	0.212	0.060
2006-2007	0.207	0.226
Constant	-1.156***	-0.117
Observations	1,253	1,253

Notes: *** p<0.01, ** p<0.05, * p<0.1

Source: Author's own calculations from BHPS

Vertical inequalities of first occupation

Table B4.2 Prestige score of first occupation (OLS regression)

	Both	*Male*	*Female*
Ref: Male			
Female	3.363***		
Ref: Gender-balanced occupation			
Female-concentrated occupation	1.778*	0.300	2.241*
Male-concentrated occupation	-4.910***	-5.738***	-2.378
Ref: University degree or higher			
Tertiary degree (Non-university level)	-18.756***	-17.268***	-19.897***
Upper secondary degree (A-Levels)	-17.417***	-15.046***	-18.839***
Lower secondary degree(GCSE)	-20.010***	-17.513***	-21.610***
Other	-25.141***	-23.218***	-26.144***
Ref: England			
Wales	-2.433	-1.378	-2.948
Scotland	-1.728	-2.073	-1.641
Ref: In a Partnership			
Widowed/partnership ended	3.867	2.984	3.253
Never married	-0.747	-1.637	-0.619
Ref: 2000-01			
1991-1993	-2.833	-4.352*	-1.029
1994-1997	-3.174**	-1.869	-4.166**
1998- 1999	-0.533	-0.147	-0.708
2002-2003	0.049	3.564*	-2.754
2004-2005	-2.343	-1.949	-2.165
2006-2007	-0.173	1.968	-1.747
Constant	51.624***	50.097***	56.362***
Observations	1,209	587	622
R-squared	0.341	0.319	0.301

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B4.3 OLS linear regression models to analyse first significant job prestige score (gender-specific CAMSIS) including models with family characteristics and parental prestige score

	m1	m2	m3	m4	m5	m6	m7
Gender (ref. male)							
Female	6.35***	6.47***	8.74***	8.52***	2.77	2.59	3.10
	(0.51)	(0.68)	(0.53)	(1.60)	(2.00)	(1.99)	(2.01)
Cohort (ref. 1940-1956)							
1957-1973	-1.52***	-1.79**	-3.88***	-3.73***	-4.43***	-4.22***	-4.52***
	(0.55)	(0.78)	(0.60)	(0.62)	(0.58)	(0.59)	(0.59)
1974-1991	-0.43	0.05	-6.13***	-6.44***	-8.43***	-8.11***	-8.51***
	(0.78)	(1.12)	(1.03)	(1.13)	(1.09)	(1.06)	(1.04)
*Cohort (ref. 1940-1956*female)*							
1957-1973*female		0.53	-1.67**	-2.02**	-0.54	-0,74	-0.43
		(0.93)	(0.79)	(0.84)	(0.81)	(0.82)	(0.81)
1974-1991*female		-0.90	-3.22**	-2.62*	-1.00	-0.99	-0.74
		(1.30)	(1.27)	(1.48)	(1.49)	(1.46)	(1.43)
Education levels (ref. high tertiary)							
1a:None			-34.65***	-33.91***	-30.99***	-31.13***	-28.51***
			(1.12)	(1.34)	(1.36)	(1.33)	(1.34)
1b:Elementary			-28.55***	-29.52***	-26.84***	-27.44***	-24.80***
			(1.36)	(1.88)	(1.76)	(1.80)	(1.82)
1c:Basic vocational			-27.30***	-29.85***	-26.05***	-26.38***	-23.82***
			(1.07)	(1.55)	(1.54)	(1.50)	(1.49)
2b:Middle general			-23.31***	-23.31***	-21.78***	-21.84***	-20.08***
			(1.20)	(1.57)	(1.48)	(1.44)	(1.38)
2a:Middle vocational			-24.51***	-27.10***	-22.70***	-22.94***	-20.95***
			(1.24)	(1.57)	(1.53)	(1.51)	(1.49)
2c:Gen:high general			-18.98***	-17.35***	-18.03***	-18.17***	-17.57***
			(1.48)	(1.90)	(1.75)	(1.71)	(1.68)
2c:Voc:high vocational			-22.60***	-23.90***	-20.74***	-21.00***	-19.14***
			(1.40)	(1.82)	(1.78)	(1.74)	(1.70)
3a:Lower tertiary			-16.51***	-15.91***	-14.74***	-15.03***	-13.87***
			(1.27)	(1.67)	(1.57)	(1.53)	(1.45)
*Education levels*female (ref. high tertiary)*							
1a:None*female				-1.31	-0.42	-0.09	-1.57
				(1.74)	(1.74)	(1.74)	(1.84)
1b:Elementary*female				2.55	1.19	1.96	0.34
				(2.55)	(2.27)	(2.33)	(2.39)
1c:Basic vocational*female				4.66**	0.23	0.71	-0.95
				(2.20)	(2.06)	(2.05)	(2.06)
2b:Middle general*female				0.04	-1.70	-1.57	-2.53
				(1.91)	(1.87)	(1.87)	(1.91)
2a:Middle vocational*female				4.27**	-1.25	-0.86	-2.09
				(1.80)	(1.78)	(1.78)	(1.84)
2c:Gen:high general*female				-2.84	-3.19	-3.04	-3.02
				(2.23)	(2.19)	(2.16)	(2.16)
2c:Voc:high vocational*female				2.84	-1.02	-0.55	-1.47
				(2.25)	(2.22)	(2.20)	(2.24)
3a:Lower tertiary*female				-1.17	-2.92	-2.51	-3.15
				(2.08)	(1.99)	(1.98)	(1.93)

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Table B4.3 Continued

	m1	m2	m3	m4	m5	m6	m7
Blossfeld(1987):Occupational field (ref. production)							
Services					10.47***	10.20***	9.55***
					(1.02)	(1.03)	(1.00)
Administration					9.69***	9.59***	9.03***
					(0.73)	(0.73)	(0.70)
*Blossfeld(1987):Occupational field*female (ref. production)*							
Services*female					2.57	2.80*	3.29**
					(1.62)	(1.61)	(1.59)
Administration*female					3.60***	3.65***	4.08***
					(1.30)	(1.30)	(1.28)
Family (ref. single)							
Cohabiting*female						-5.24**	-4.81*
						(2.46)	(2.48)
Married*female						9.84***	10.15***
						(2.83)	(2.79)
Parent*female						1.87	2.01
						(1.51)	(1.47)
*Family*female (ref. single)*							
Cohabiting*female						2.21	1.59
						(3.24)	(3.25)
Married*female						-5.19	-5.85*
						(3.21)	(3.19)
Parent*female						-2.53	-2.25
						(2.15)	(2.07)
Social origin							
Fathers' prestige score							0.12***
							(0.02)
Fathers' prestige*female							-0.08***
							(0.03)
Mothers' prestige							0.02
							(0.03)
Mothers' prestige*female							-0.03
							(0.04)
Social origin(ref. working father)							
Father not working							-1.80*
							(0.92)
Father deceased							-0.70
							(0.90)
Status unknown							-2.65***
							(0.78)
Social origin(ref. working mother)							
Mother not working							-0.28
							(0.35)
Mother deceased							-2.63*
							(1.34)
status unknown							1.27
							(0.80)
Constant	29.49***	29.43***	52.67***	52.78***	46.91***	46.94***	46.17***
	(0.53)	(0.60)	(1.08)	(1.31)	(1.36)	(1.31)	(1.28)
Observations	4,987	4,987	4,987	4,987	4,987	4,987	4,987
R-squared	0.04	0.04	0.37	0.38	0.45	0.46	0.47

Notes: Standard errors in parentheses, (+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$), models weighted to take into account a complex survey design and sample sizes(cross-sectional weights are used for cohorts using retrospective information and longitudinal weights are used for the youngest cohorts).

Source: Author's own calculations from BHPS.

Table B4.4 OLS linear regression models to analyse first significant job prestige score (female-only CAMSIS) including models with family characteristics and parental prestige score

	m1	m2	m3	m4	m5
Gender (ref. male)					
Female	5.87***	5.64***	8.00***	5.73***	-0.14
	(0.52)	(0.72)	(0.55)	(1.66)	(2.06)
Cohort (ref. 1940-1956)					
1957-1973	-1.69***	-2.15**	-4.32***	-4.23***	-4.89***
	(0.56)	(0.83)	(0.64)	(0.66)	(0.63)
1974-1991	-0.75	-0.64	-7.03***	-7.51***	-9.46***
	(0.80)	(1.16)	(1.06)	(1.15)	(1.12)
*Cohort (ref. 1940-1956*female)*					
1957-1973*female		0.89	-1.38*	-1.51*	-0.07
		(0.97)	(0.82)	(0.88)	(0.85)
1974-1991*female		-0.21	-2.59**	-1.54	0.03
		(1.33)	(1.28)	(1.50)	(1.51)
Education levels (ref. high tertiary)					
1a:None			-35.96***	-36.40***	-33.56***
			(1.17)	(1.44)	(1.48)
1b:Elementary			-29.63***	-31.49***	-28.88***
			(1.40)	(1.97)	(1.87)
1c:Basic vocational			-28.72***	-32.60***	-28.90***
			(1.12)	(1.65)	(1.66)
2b:Middle general			-24.44***	-25.46***	-23.93***
			(1.25)	(1.68)	(1.61)
2a:Middle vocational			-25.73***	-29.47***	-25.16***
			(1.29)	(1.69)	(1.68)
2c:Gen:high general			-20.00***	-19.33***	-19.89***
			(1.52)	(2.01)	(1.87)
2c:Voc:high vocational			-23.70***	-26.00***	-22.83***
			(1.44)	(1.92)	(1.89)
3a:Lower tertiary			-17.31***	-17.36***	-16.19***
			(1.32)	(1.78)	(1.69)

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Table B4.4 Continued

	m1	m2	m3	m4	m5
*Education levels*female (ref. high tertiary)*					
1a:None*female				1.18	2.15
				(1.77)	(1.78)
1b:Elementary*female				4.52*	3.23
				(2.60)	(2.32)
1c:Basic vocational*female				7.42***	3.09
				(2.23)	(2.10)
2b:Middle general*female				2.19	0.45
				(1.96)	(1.93)
2a:Middle vocational*female				6.64***	1.21
				(1.86)	(1.86)
2c:Gen:high general*female				-0.86	-1.34
				(2.29)	(2.25)
2c:Voc:high vocational*female				4.94**	1.07
				(2.30)	(2.27)
3a:Lower tertiary*female				0.28	-1.47
				(2.13)	(2.04)
Blossfeld(1987):Occupational field (ref. production)					
Services					10.86***
					(1.09)
Administration					9.03***
					(0.76)
*Blossfeld(1987):Occupational field*female (ref. production)*					
Services*female					2.18
					(1.67)
Administration*female					4.26***
					(1.33)
Constant	30.14***	30.26***	54.54***	55.57***	49.81***
	(0.55)	(0.65)	(1.16)	(1.44)	(1.51)
Observations	4,987	4,987	4,987	4,987	4,987
R-squared	0.03	0.03	0.37	0.38	0.45

Notes: standard errors in parentheses, (+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$), models weighted to take into account a complex survey design and sample sizes(cross-sectional weights are used for cohorts using retrospective information and longitudinal weights are used for the youngest cohorts).

Source: Author's own calculations from BHPS.

Table B4.5 OLS linear regression models to analyse first significant job prestige score (male-only CAMSIS) including models with family characteristics and parental prestige score

	m1	m2	m3	m4	m5
Gender (ref. male)					
Female	5.67***	5.61***	7.76***	5.22***	-0.46
	(0.49)	(0.66)	(0.52)	(1.53)	(1.87)
Cohort (ref. 1940-1956)					
1957-1973	-1.44***	-1.79**	-3.79***	-3.73***	-4.43***
	(0.52)	(0.78)	(0.60)	(0.62)	(0.58)
1974-1991	-0.22	0.05	-5.93***	-6.44***	-8.43***
	(0.75)	(1.12)	(1.03)	(1.13)	(1.09)
*Cohort (ref. 1940-1956*female)*					
1957-1973*female		0.69	-1.41*	-1.48*	0.05
		(0.91)	(0.77)	(0.82)	(0.78)
1974-1991*female		-0.51	-2.72**	-1.56	0.23
		(1.27)	(1.24)	(1.45)	(1.45)
Education levels (ref. high tertiary)					
1a:None			-33.09***	-33.91***	-30.99***
			(1.06)	(1.34)	(1.36)
1b:Elementary			-27.34***	-29.52***	-26.84***
			(1.31)	(1.88)	(1.76)
1c:Basic vocational			-26.12***	-29.85***	-26.05***
			(1.01)	(1.55)	(1.54)
2b:Middle general			-22.18***	-23.31***	-21.78***
			(1.13)	(1.57)	(1.48)
2a:Middle vocational			-23.33***	-27.10***	-22.70***
			(1.17)	(1.57)	(1.53)
2c:Gen:high general			-17.88***	-17.35***	-18.03***
			(1.40)	(1.90)	(1.75)
2c:Voc:high vocational			-21.58***	-23.90***	-20.74***
			(1.33)	(1.82)	(1.78)
3a:Lower tertiary			-15.92***	-15.91***	-14.74***
			(1.21)	(1.67)	(1.57)
			0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)

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Table B4.5 Continued

	m1	m2	m3	m4	m5
*Education levels*female (ref. high tertiary)*					
1a:None*female				1.96	2.72
				(1.66)	(1.66)
1b:Elementary*female				5.33**	3.86*
				(2.47)	(2.18)
1c:Basic vocational*female				7.19***	2.59
				(2.11)	(1.96)
2b:Middle general*female				2.42	0.55
				(1.84)	(1.80)
2a:Middle vocational*female				6.76***	1.08
				(1.74)	(1.70)
2c:Gen:high general*female				-0.59	-1.06
				(2.15)	(2.10)
2c:Voc:high vocational*female				4.98**	1.01
				(2.23)	(2.19)
3a:Lower tertiary*female				0.18	-1.48
				(1.98)	(1.90)
Blossfeld(1987):Occupational field (ref. production)					
Services					10.47***
					(1.02)
Administration					9.69***
					(0.73)
*Blossfeld(1987):Occupational field*female (ref. production)*					
Services*female					1.85
					(1.53)
Administration*female					3.92***
					(1.22)
Constant	29.39***	29.43***	51.64***	52.78***	46.91***
	(0.51)	(0.60)	(1.03)	(1.31)	(1.36)
Observations	4,987	4,987	4,987	4,987	4,987
R-squared	0.04	0.04	0.36	0.37	0.45

Notes: Standard errors in parentheses, (+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$), models weighted to take into account a complex survey design and sample sizes (cross-sectional weights are used for cohorts using retrospective information and longitudinal weights are used for the youngest cohorts).

Source: Author's own calculations from BHPS.

Chapter 4 average marginal effects for occupational field and logged hourly wages

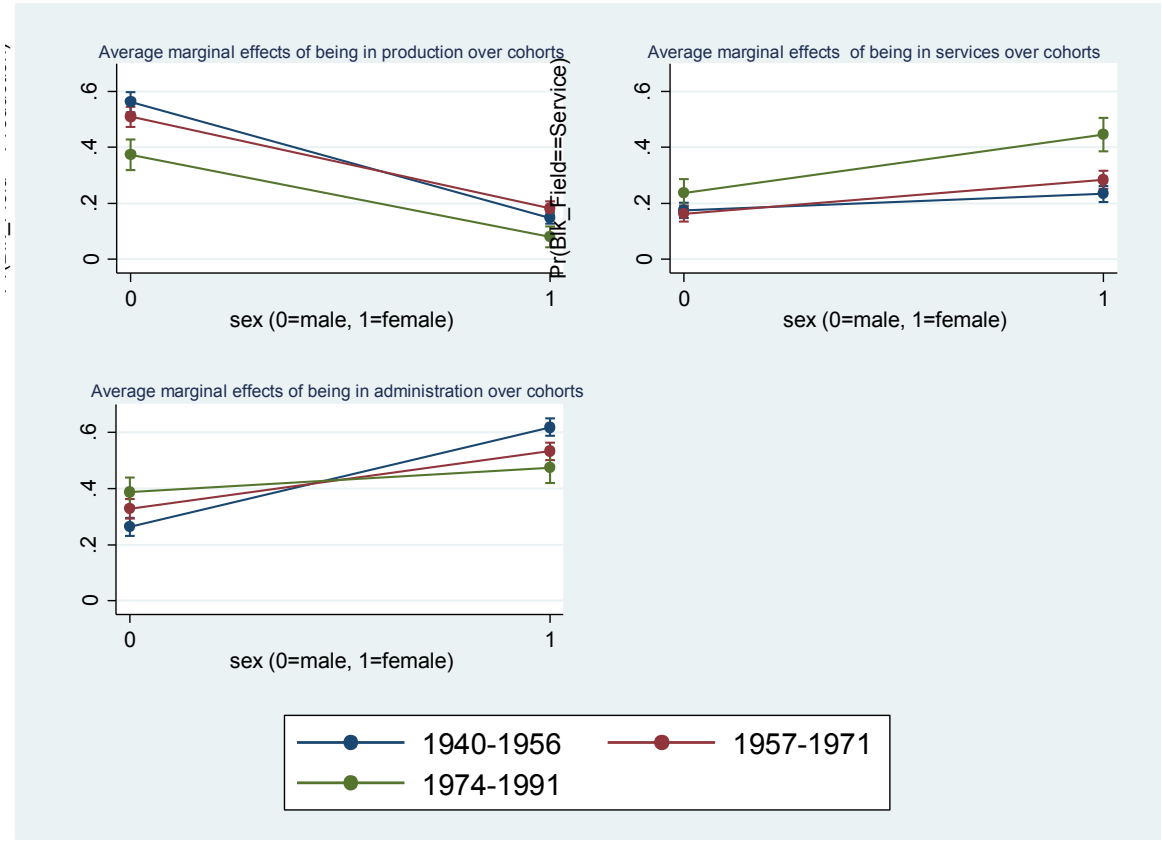

Figure B4.4: Average marginal effects for occupational field by gender and cohort

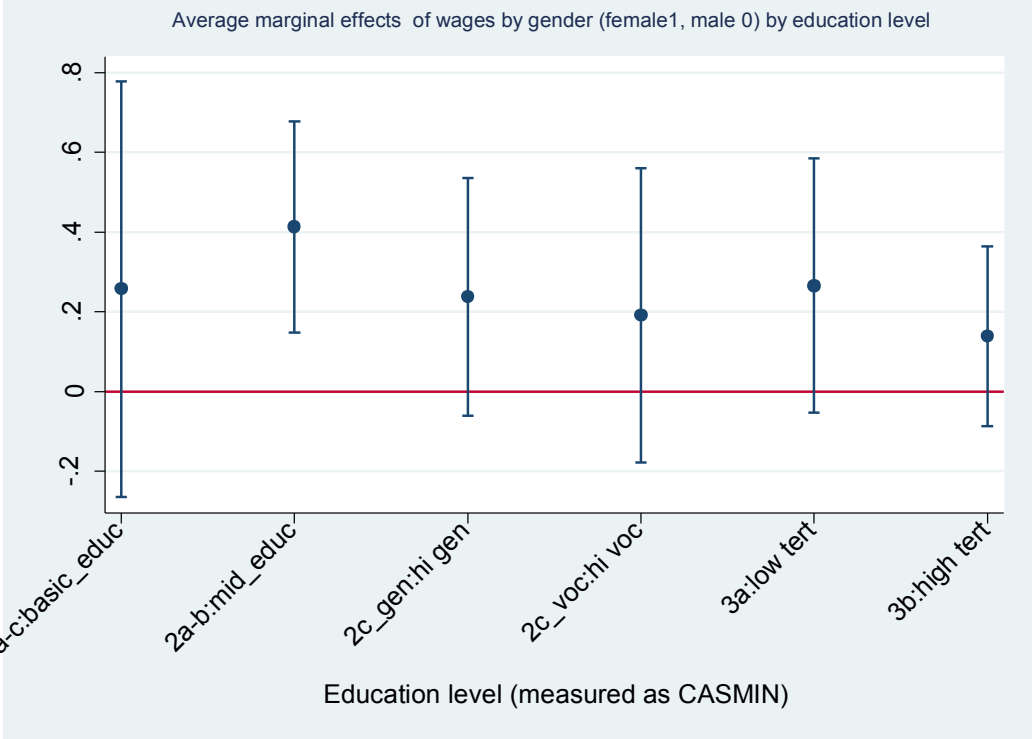

Figure B4.5: Average marginal effects for logged hourly wages by gender and education level. (0 male, 1 female) with confidence intervals.

APPENDIX C. ADDITIONAL MATERIAL FOR CHAPTER 5

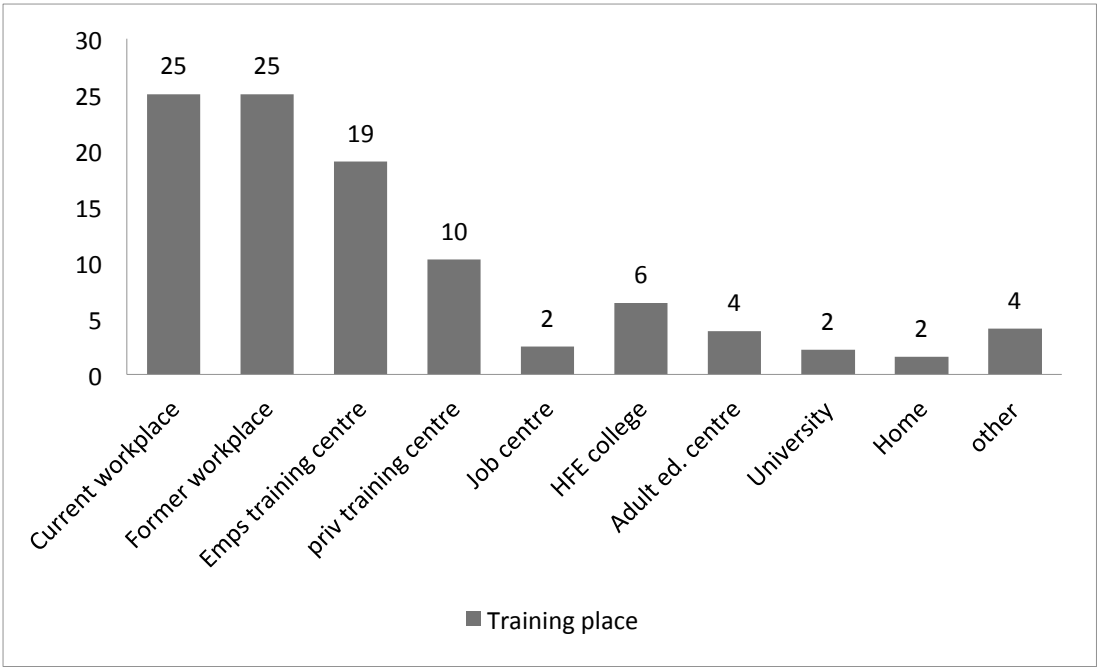

Figure C5.1 Certified non-formal adult learning by training location

Source: Author's own calculations from BHPS.

Table C5.1: Probability of obtaining an educational upgrade and sidestep in the next wave in the United Kingdom (results as log odds ratios, observations nested within individuals)

	educational upgrade: full model			same qualification or lower (sidestep)		
	both	women	men	both	women	men
Female	0.006			0.381***		
	(0.048)			(0.059)		
Age	0.030***	0.045***	0.009	-0.036***	-0.008	-0.084***
	(0.009)	(0.014)	(0.013)	(0.011)	(0.016)	(0.016)
Age squared	-0.001***	-0.002***	-0.001***	-0.000	-0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Labour force status (ref. employed, incl. self-employed)						
Unemployed	-0.087	-0.498***	0.115	0.599***	0.394**	0.723***
	(0.103)	(0.193)	(0.124)	(0.105)	(0.164)	(0.142)
Outside	-0.110	-0.163**	0.203	0.234***	0.185**	0.417**
	(0.068)	(0.081)	(0.132)	(0.079)	(0.091)	(0.165)
Highest education level (ref. first degree)						
Postgraduate degree				0.543***	0.712***	0.359
				(0.146)	(0.189)	(0.232)
Teaching qualification	0.256	0.311	0.084	0.365**	0.275	0.502
	(0.269)	(0.320)	(0.536)	(0.165)	(0.190)	(0.333)
Other tertiary qualificaton	-0.048	0.161	-0.287	0.239***	0.208*	0.294**
	(0.130)	(0.177)	(0.194)	(0.082)	(0.106)	(0.129)
A-level and equivalent	2.132***	2.109***	2.130***	-0.054	-0.065	-0.041
	(0.123)	(0.173)	(0.175)	(0.096)	(0.126)	(0.149)
GCSE and equivalent	1.989***	2.024***	1.932***	-0.845***	-0.835***	-0.902***
	(0.124)	(0.174)	(0.176)	(0.098)	(0.124)	(0.161)
Other secondary	1.819***	1.775***	1.853***	-1.934***	-1.732***	-2.417***
	(0.136)	(0.190)	(0.193)	(0.173)	(0.204)	(0.331)
Other	1.888***	2.004***	1.721***	-2.061***	-1.912**	-2.417**
	(0.265)	(0.362)	(0.387)	(0.619)	(0.754)	(1.091)
None	1.653***	1.647***	1.637***	-5.190***	-5.095***	-5.415***
	(0.133)	(0.188)	(0.188)	(0.585)	(0.717)	(1.012)
Marital status: partnership						
Widowed/partnership ended	0.166*	0.260**	-0.130	0.032	-0.052	0.166
	(0.086)	(0.105)	(0.161)	(0.101)	(0.121)	(0.184)
Never married	0.167**	0.316***	-0.029	0.004	0.082	-0.148
	(0.067)	(0.094)	(0.095)	(0.075)	(0.098)	(0.118)

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Table C5.1: Continued

	educational upgrade: full model			same qualification or lower (sidestep)		
	both	women	men	both	women	men
Age of youngest child in household (ref. no children)						
Under 1	-0.358***	-0.661***	-0.091	-0.838***	-1.167***	-0.405**
	(0.109)	(0.170)	(0.143)	(0.141)	(0.208)	(0.195)
Between 1 and 3	-0.273***	-0.323***	-0.203*	-0.119	-0.110	-0.072
	(0.077)	(0.107)	(0.113)	(0.082)	(0.105)	(0.133)
4 and over	-0.023	0.091	-0.238***	0.230***	0.274***	0.178*
	(0.055)	(0.074)	(0.087)	(0.062)	(0.080)	(0.103)
Log income	0.014	0.017	0.047	-0.097**	-0.073	-0.134**
	(0.037)	(0.051)	(0.054)	(0.038)	(0.050)	(0.060)
94-97	0.319***	0.280***	0.354***	0.131*	0.239***	-0.012
	(0.067)	(0.092)	(0.098)	(0.070)	(0.093)	(0.107)
98-99	0.629***	0.619***	0.625***	-0.249***	-0.213*	-0.291**
	(0.077)	(0.105)	(0.112)	(0.088)	(0.117)	(0.135)
2000-01	0.345***	0.373***	0.291**	-0.326***	-0.208*	-0.506***
	(0.086)	(0.117)	(0.127)	(0.091)	(0.118)	(0.145)
2002-03	0.506***	0.602***	0.356***	-0.368***	-0.409***	-0.311**
	(0.087)	(0.116)	(0.130)	(0.093)	(0.125)	(0.141)
2004-05	0.578***	0.596***	0.525***	-0.023	0.103	-0.229
	(0.090)	(0.122)	(0.132)	(0.088)	(0.113)	(0.141)
2006-07	0.568***	0.592***	0.508***	-0.137	-0.185	-0.073
	(0.093)	(0.127)	(0.137)	(0.091)	(0.121)	(0.138)
Constant	-5.615***	-5.888***	-5.538***	-2.439***	-2.630***	-1.547**
	(0.428)	(0.593)	(0.634)	(0.424)	(0.556)	(0.662)
Observations	94,845	48,830	46,015	97,543	50,007	47,536
Number of pid	10,742	5,394	5,348	10,954	5,477	5,477

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. waves 1-18, also controlling for year

Source: Author's own calculations from BHPS.

Table C5.2: Probability of an educational upgrade or sidestep in the next wave in the United Kingdom for the employed population only (results as log odds ratios, observations nested within individuals)

	educational upgrade			qualification at same level		
	both	women	men	(side-step)	(side-step)	(side-step)
Female	-0.073			0.267***		
	(0.085)			(0.100)		
Highest education level (ref. first degree)						
Postgraduate degree				0.498**	0.702***	0.247
				(0.212)	(0.261)	(0.365)
Teaching qualification	0.459	0.081	1.111*	0.227	0.222	0.281
	(0.460)	(0.640)	(0.666)	(0.275)	(0.304)	(0.575)
Other tertiary qualificaton	0.271	0.663**	-0.372	0.093	0.139	0.060
	(0.218)	(0.282)	(0.356)	(0.124)	(0.154)	(0.206)
A-level and equivalent	2.927***	2.884***	2.896***	-0.138	-0.099	-0.175
	(0.212)	(0.285)	(0.316)	(0.151)	(0.192)	(0.245)
GCSE and equivalent	2.887***	2.958***	2.758***	-1.077***	-1.111***	-1.051***
	(0.215)	(0.292)	(0.318)	(0.165)	(0.212)	(0.266)
Other secondary	2.762***	2.651***	2.777***	-2.422***	-1.976***	-3.379***
	(0.235)	(0.324)	(0.342)	(0.370)	(0.425)	(0.761)
Other	3.161***	3.170***	3.090***	-	-	-
	(0.435)	(0.635)	(0.598)			
None	2.889***	2.966***	2.757***	-4.020***	-4.060***	-3.949***
	(0.238)	(0.333)	(0.343)	(0.726)	(1.022)	(1.036)
Age	0.014	0.014	0.007	-0.036**	-0.006	-0.081***
	(0.015)	(0.022)	(0.021)	(0.018)	(0.025)	(0.027)
Age squared	-0.001***	-0.001*	-0.001*	0.000	-0.000	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Marital status: partnership						
Widowed/partnership ended	0.163	0.365**	-0.403	-0.114	-0.245	0.018
	(0.136)	(0.162)	(0.284)	(0.163)	(0.194)	(0.306)
Never married	-0.044	0.071	-0.139	-0.085	-0.127	-0.097
	(0.107)	(0.153)	(0.152)	(0.118)	(0.155)	(0.188)
Age of youngest child in household (ref. no children)						
Under 1	-0.296	-0.710**	-0.095	-1.127***	-1.726***	-0.603*
	(0.183)	(0.314)	(0.229)	(0.269)	(0.466)	(0.340)
Between 1 and 3	-0.205	-0.376*	-0.107	-0.191	-0.307	0.023
	(0.128)	(0.196)	(0.172)	(0.139)	(0.189)	(0.210)
4 and over	-0.107	-0.049	-0.275**	0.064	0.086	0.050
	(0.089)	(0.121)	(0.139)	(0.100)	(0.129)	(0.166)
logincome	-0.025	0.010	-0.050	-0.162**	-0.239**	-0.107
	(0.070)	(0.093)	(0.108)	(0.075)	(0.094)	(0.125)
2000-01	-0.233**	-0.183	-0.269*	-0.014	0.104	-0.201
	(0.100)	(0.142)	(0.144)	(0.119)	(0.160)	(0.182)
2002-03	-0.102	-0.025	-0.161	-0.032	-0.079	0.006
	(0.112)	(0.163)	(0.158)	(0.134)	(0.190)	(0.190)
2004-05	-0.009	0.011	-0.012	0.300**	0.387**	0.141
	(0.116)	(0.170)	(0.163)	(0.130)	(0.183)	(0.191)
2006-07	-0.002	0.062	-0.057	0.227*	0.165	0.287
	(0.121)	(0.174)	(0.174)	(0.132)	(0.188)	(0.188)

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Table C5.2: Continued

	educational upgrade			qualification at same level		
	both	women		both	women	
Social class (ref. higher professionals)						
Lower professionals	-0.103	-0.184	-0.052	0.048	-0.224	0.406*
	(0.127)	(0.176)	(0.185)	(0.127)	(0.159)	(0.207)
Routine non-manual employees	-0.561***	-0.543***	-0.747***	0.290**	0.150	0.299
	(0.140)	(0.179)	(0.258)	(0.145)	(0.172)	(0.284)
Personal service employees	-0.396**	-0.358*	-1.086**	0.412**	0.161	0.679*
	(0.163)	(0.201)	(0.441)	(0.174)	(0.200)	(0.408)
Famers	-0.338		0.193	1.226	1.618	
	(0.816)		(0.886)	(1.170)	(1.264)	
Foremen and technicians	-0.028	-0.433	0.131	0.833***	0.147	1.270***
	(0.154)	(0.269)	(0.199)	(0.166)	(0.282)	(0.231)
Skilled manual	-0.322**	-0.447	-0.367*	0.591***	0.216	0.852***
	(0.163)	(0.304)	(0.208)	(0.190)	(0.366)	(0.254)
Semi- and unskilled manual	-0.428***	-0.541**	-0.405**	0.621***	0.313	0.903***
	(0.143)	(0.211)	(0.198)	(0.158)	(0.217)	(0.240)
Firm size (ref. 50 and fewer)						
50-250	0.112	0.115	0.135	-0.037	0.032	-0.086
	(0.078)	(0.108)	(0.113)	(0.090)	(0.117)	(0.143)
250+	0.039	-0.056	0.139	0.100	-0.001	0.211
	(0.102)	(0.141)	(0.148)	(0.107)	(0.140)	(0.168)
Part-time (ref. full-time 30 and more)	0.066	0.052	0.373	0.208*	0.154	0.490*
	(0.101)	(0.117)	(0.244)	(0.109)	(0.124)	(0.262)
Fixed term contract (ref. permanent)	0.210	0.039	0.385	-0.055	-0.159	0.104
	(0.159)	(0.218)	(0.236)	(0.176)	(0.221)	(0.292)
Industry(ref. extractive)						
Transformative/Distributive	-0.638**	-0.353	-0.563*	1.323**	0.505	2.039*
	(0.269)	(0.627)	(0.306)	(0.647)	(0.816)	(1.072)
Social	-0.026	0.479	-0.331	1.557**	0.910	1.943*
	(0.278)	(0.628)	(0.340)	(0.650)	(0.815)	(1.085)
Producer/Personal	-0.899***	-0.326	-1.138***	1.024	0.317	1.674
	(0.287)	(0.636)	(0.350)	(0.655)	(0.824)	(1.086)
Transport/Communication	-1.016***	-0.784	-0.954***	1.270*	0.324	2.043*
	(0.307)	(0.689)	(0.353)	(0.665)	(0.866)	(1.089)
Other Services	-0.019	0.521	-0.222	1.606**	0.878	2.236**
	(0.284)	(0.633)	(0.354)	(0.656)	(0.824)	(1.096)
Log of job experience	-0.024	-0.069	0.026	-0.113**	-0.136**	-0.088
	(0.043)	(0.061)	(0.062)	(0.051)	(0.066)	(0.079)
Constant	-4.572***	-5.430***	-4.398***	-3.766***	-1.909	-5.196***
	(0.854)	(1.269)	(1.298)	(1.061)	(1.340)	(1.789)
Observations	36,719	18,646	18,055	37,972	19,189	18,759
Number of pid	6,587	3,406	3,180	6,763	3,480	3,279

Source: Author's own calculations from BHPS.

Notes: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C5.3 Enrolment in formal adult education and participation in non-formal adult learning measured in the next wave in the United Kingdom (results as log odds ratios, observations nested within individuals)

	Enrolment in formal: full model			Certified non-formal learning: full model		
	Both	Women	Men	Both	Women	Men
Female (from model with both genders)	0.507***			-0.028		
	(0.049)			(0.041)		
Age	0.010	0.041***	-0.026*	0.002	0.014	-0.014
	(0.010)	(0.014)	(0.014)	(0.008)	(0.012)	(0.011)
Age squared	-0.001***	-0.001***	-0.000	-0.001***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
labour force status (ref. employed)						
Unemployed	0.294**	0.283*	0.280	-0.295***	-0.310*	-0.340***
	(0.120)	(0.169)	(0.173)	(0.100)	(0.164)	(0.127)
Outside	0.421***	0.306***	0.765***	-0.462***	-0.337***	-0.600***
	(0.065)	(0.075)	(0.127)	(0.066)	(0.077)	(0.135)
Highest education (ref. first degree)						
Postgraduate degree	0.060	0.328**	-0.290	-0.196*	-0.111	-0.267
	(0.127)	(0.165)	(0.201)	(0.118)	(0.164)	(0.171)
Teaching qualification	0.163	0.248	-0.093	0.316***	0.225	0.375*
	(0.148)	(0.170)	(0.311)	(0.123)	(0.145)	(0.228)
Other tertiary qualification	-0.349***	-0.211**	-0.553***	-0.042	-0.104	0.016
	(0.069)	(0.089)	(0.107)	(0.059)	(0.080)	(0.086)
A-level and equivalent	-0.458***	-0.447***	-0.505***	-0.412***	-0.511***	-0.324***
	(0.084)	(0.111)	(0.128)	(0.074)	(0.103)	(0.105)
GCSE and equivalent	-0.689***	-0.687***	-0.715***	-0.705***	-0.788***	-0.643***
	(0.079)	(0.101)	(0.125)	(0.070)	(0.094)	(0.104)
Other secondary	-1.115***	-1.093***	-1.180***	-0.950***	-1.149***	-0.781***
	(0.115)	(0.144)	(0.187)	(0.098)	(0.137)	(0.141)
Other	-0.925***	-1.775***	-0.185	-1.408***	-1.586***	-1.269**
	(0.322)	(0.544)	(0.416)	(0.367)	(0.539)	(0.503)
None	-1.648***	-1.628***	-1.705***	-1.222***	-1.401***	-1.080***
	(0.118)	(0.150)	(0.191)	(0.094)	(0.132)	(0.134)
Marital status: partnership						
Widowed/partnership ended	0.156*	0.215**	-0.196	0.069	0.137	-0.058
	(0.085)	(0.098)	(0.177)	(0.071)	(0.089)	(0.122)
Never married	0.104	0.005	0.132	0.030	0.021	0.034
	(0.067)	(0.089)	(0.104)	(0.055)	(0.079)	(0.079)

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Table C5.3 Continued

	Enrolment in formal: full model			Certified non-formal learning: full model		
	Both	Women	Both	Women	Both	Women
Age of youngest child in household (ref. no children)						
Under 1	-0.442***	-0.562***	-0.163	-0.210**	-0.744***	0.165
	(0.112)	(0.148)	(0.172)	(0.082)	(0.140)	(0.106)
Between 1 and 3	-0.198**	-0.165*	-0.179	-0.103*	-0.223***	0.009
	(0.077)	(0.097)	(0.129)	(0.059)	(0.085)	(0.084)
4 and over	0.139**	0.209***	-0.026	-0.031	0.008	-0.091
	(0.057)	(0.072)	(0.098)	(0.045)	(0.062)	(0.068)
log of income	-0.050*	-0.077**	-0.014	-0.022	0.020	-0.059*
	(0.028)	(0.038)	(0.044)	(0.026)	(0.039)	(0.035)
Constant	-2.135***	-1.728***	-1.975***	-2.763***	-3.315***	-2.245***
	(0.327)	(0.431)	(0.510)	(0.295)	(0.433)	(0.402)
Observations	55,245	27,471	27,774	97,619	50,036	47,583
Number of pid	9,343	4,688	4,655	10,961	5,479	5,482

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Waves 8-18 for all other models except certified non-formal learning waves 1-18, controlling for year

Source: Author's own calculations from BHPS.

Table C5.4 Enrolment in formal adult education and participation in non-formal adult learning measured in the next wave in the United Kingdom (results as log odds ratios, observations nested within individuals)

	Internal training: full model			External training:full model		
	Both	Women	Men	Both	Women	Men
Female (from model with both genders)	0.186***			0.186**		
	(0.050)			(0.087)		
Age	0.021**	-0.007	0.037***	0.049***	0.043	0.053**
	(0.009)	(0.013)	(0.013)	(0.018)	(0.026)	(0.026)
Age squared	-0.001***	0.000	-0.001***	-0.001**	-0.001	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
labour force status (ref. employed)						
Unemployed	-1.026***	-0.827***	-1.239***	0.759***	-0.077	1.239***
	(0.141)	(0.191)	(0.209)	(0.178)	(0.347)	(0.219)
Outside	-2.328***	-2.325***	-2.227***	-0.587***	-0.644***	-0.420
	(0.110)	(0.129)	(0.215)	(0.147)	(0.175)	(0.277)
Highest education (ref. first degree)						
Postgraduate degree	-0.157	-0.007	-0.331*	-0.106	-0.073	-0.167
	(0.132)	(0.192)	(0.180)	(0.216)	(0.303)	(0.306)
Teaching qualification	0.139	0.371*	-0.404	0.383*	0.604**	-0.297
	(0.160)	(0.194)	(0.293)	(0.230)	(0.268)	(0.485)
Other tertiary qualificaton	-0.456***	-0.384***	-0.529***	-0.485***	-0.403**	-0.570***
	(0.070)	(0.098)	(0.100)	(0.117)	(0.159)	(0.171)
A-level and equivalent	-0.685***	-0.696***	-0.673***	-0.866***	-0.833***	-0.894***
	(0.085)	(0.121)	(0.120)	(0.158)	(0.218)	(0.229)
GCSE and equivalent	-0.878***	-0.793***	-0.969***	-0.965***	-1.081***	-0.806***
	(0.081)	(0.111)	(0.119)	(0.144)	(0.198)	(0.211)
Other secondary	-1.309***	-1.108***	-1.552***	-1.432***	-1.344***	-1.516***
	(0.116)	(0.158)	(0.173)	(0.228)	(0.298)	(0.354)
Other	-2.050***	-2.078***	-2.029***	-0.697	-1.592	-0.174
	(0.434)	(0.628)	(0.595)	(0.561)	(1.096)	(0.691)
None	-1.780***	-1.674***	-1.887***	-1.479***	-1.344***	-1.649***
	(0.115)	(0.160)	(0.165)	(0.200)	(0.271)	(0.298)
Marital status: partnership						
Widowed/partnership ended	0.158**	0.225**	0.055	0.051	0.045	0.103
	(0.079)	(0.103)	(0.128)	(0.152)	(0.198)	(0.242)
Never married	-0.014	0.130	-0.167*	0.161	0.432**	-0.172
	(0.064)	(0.090)	(0.092)	(0.126)	(0.168)	(0.194)

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Table C5.4 Continued

	Internal training: full model			External training:full model		
	Both	Women	Men	Both	Women	Men
Age of youngest child in household (ref. no children)						
Under 1	-0.040	-0.252**	0.135	-0.039	0.101	-0.227
	(0.081)	(0.121)	(0.109)	(0.183)	(0.245)	(0.277)
Between 1 and 3	-0.025	-0.019	-0.023	-0.019	0.003	-0.054
	(0.062)	(0.088)	(0.087)	(0.133)	(0.185)	(0.194)
4 and over	-0.021	-0.060	0.043	-0.019	0.065	-0.117
	(0.049)	(0.068)	(0.071)	(0.099)	(0.133)	(0.153)
log of income	0.348***	0.361***	0.350***	0.082	0.126	0.058
	(0.035)	(0.050)	(0.051)	(0.058)	(0.086)	(0.080)
Constant	-5.535***	-5.512***	-5.398***	-6.328***	-6.688***	-5.937***
	(0.389)	(0.540)	(0.565)	(0.668)	(0.968)	(0.934)
Observations	60,478	31,188	29,290	60,472	31,186	29,286
Number of pid	8,672	4,418	4,254	8,667	4,417	4,250

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Waves 8-18 for all other models except certified non-formal learning waves 1-18, controlling for year

Source: Author's own calculations from BHPS.

Table C5.5 Participation in non-formal adult learning measured in the next wave in the United Kingdom for the employed population only (results as log odds ratios, observations nested within individuals)

	Certified Non-formal learning			Internal training		
	both	women	men	both	women	men
Female	-0.079			-0.058		
	(0.052)			(0.056)		
Highest education (ref. first degree)						
Postgraduate degree	-0.217*	-0.134	-0.259	-0.221*	0.034	-0.445**
	(0.129)	(0.182)	(0.184)	(0.130)	(0.194)	(0.174)
Teaching qualification	0.260*	0.124	0.472*	0.234	0.461**	-0.307
	(0.140)	(0.167)	(0.248)	(0.163)	(0.201)	(0.292)
Other tertiary qualification	0.158**	0.132	0.193*	-0.156**	-0.044	-0.259**
	(0.067)	(0.091)	(0.098)	(0.072)	(0.102)	(0.101)
A-level and equivalent	-0.266***	-0.306**	-0.229*	-0.259***	-0.234*	-0.268**
	(0.086)	(0.121)	(0.123)	(0.088)	(0.126)	(0.122)
GCSE and equivalent	-0.539***	-0.613***	-0.462***	-0.444***	-0.306***	-0.554***
	(0.083)	(0.113)	(0.123)	(0.085)	(0.118)	(0.123)
Other secondary	-0.716***	-0.910***	-0.563***	-0.726***	-0.458***	-0.980***
	(0.119)	(0.172)	(0.166)	(0.123)	(0.169)	(0.180)
Other	-0.793**	-0.938	-0.674	-1.599***	-1.275*	-1.858***
	(0.399)	(0.629)	(0.519)	(0.475)	(0.655)	(0.695)
None	-0.867***	-0.969***	-0.769***	-0.994***	-0.759***	-1.158***
	(0.117)	(0.168)	(0.165)	(0.124)	(0.177)	(0.175)
Age	-0.011	0.002	-0.027**	0.009	-0.031**	0.035**
	(0.009)	(0.014)	(0.013)	(0.010)	(0.014)	(0.014)
Age squared	-0.000	-0.000	-0.000	-0.000	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital status: partnership						
Widowed/partnership ended	0.030	0.080	-0.109	0.130	0.168	0.085
	(0.083)	(0.104)	(0.144)	(0.083)	(0.108)	(0.133)
Never married	-0.010	-0.068	0.037	0.008	0.178*	-0.178*
	(0.062)	(0.089)	(0.088)	(0.066)	(0.093)	(0.094)
Age of youngest child in household (ref. no children)						
Under 1	-0.121	-0.816***	0.232**	0.015	-0.171	0.137
	(0.096)	(0.187)	(0.117)	(0.086)	(0.132)	(0.114)
Between 1 and 3	-0.080	-0.172	-0.002	0.064	0.136	-0.018
	(0.070)	(0.107)	(0.094)	(0.066)	(0.098)	(0.091)
4 and over	-0.020	0.021	-0.080	0.029	0.038	0.026
	(0.052)	(0.073)	(0.076)	(0.051)	(0.074)	(0.074)
log of income	-0.058	-0.054	-0.073	0.200***	0.216***	0.206***
	(0.037)	(0.051)	(0.054)	(0.040)	(0.056)	(0.058)

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Table C5.5 Continued

	Certified Non-formal learning			Internal training		
	both	women	men	both	women	men
Social class (ref. higher professionals)						
Lower professionals	-0.070	-0.134	-0.026	-0.032	-0.102	0.029
	(0.059)	(0.085)	(0.084)	(0.053)	(0.077)	(0.073)
Routine non-manual employees	-0.361***	-0.385***	-0.367***	-0.151**	-0.279***	0.062
	(0.076)	(0.100)	(0.127)	(0.066)	(0.089)	(0.106)
Personal service employees	-0.236**	-0.230*	-0.751***	-0.248***	-0.432***	0.245
	(0.098)	(0.118)	(0.275)	(0.091)	(0.112)	(0.196)
Self-employed	-21.494	-17.638	-14.731	-15.526	-15.260	-14.987
	(65,072.054)	(12,489.693)	(3,405.878)	(3,210.220)	(3,543.577)	(4,351.557)
Famers	-0.966	-17.582	-0.668	-0.790	-0.461	-1.130
	(0.761)	(5,269.157)	(0.784)	(0.738)	(1.046)	(1.116)
Foremen and technicians	0.202**	-0.013	0.269***	-0.341***	-0.705***	-0.200*
	(0.084)	(0.153)	(0.103)	(0.086)	(0.166)	(0.103)
Skilled manual	-0.056	-0.319	-0.036	-0.515***	-0.650***	-0.479***
	(0.096)	(0.215)	(0.114)	(0.099)	(0.227)	(0.113)
Semi- and unskilled manual	-0.046	-0.112	-0.055	-0.768***	-0.841***	-0.738***
	(0.080)	(0.124)	(0.107)	(0.082)	(0.129)	(0.108)
Firm size (ref. 50 and fewer)						
50-250	0.013	0.005	0.041	0.228***	0.149**	0.318***
	(0.046)	(0.065)	(0.064)	(0.044)	(0.064)	(0.062)
250+	-0.043	-0.151*	0.074	0.416***	0.411***	0.436***
	(0.057)	(0.083)	(0.080)	(0.054)	(0.076)	(0.077)
Part-time (ref. full-time 30 and more)	-0.157**	-0.176**	-0.029	-0.276***	-0.245***	-0.270*
	(0.063)	(0.072)	(0.152)	(0.059)	(0.069)	(0.144)
Fixed term contract (ref. permanent)	0.137	0.081	0.198	-0.231**	-0.101	-0.454***
	(0.084)	(0.110)	(0.129)	(0.090)	(0.114)	(0.153)

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Table C5.5 Continued

	Certified Non-formal learning			Internal training		
	both	women	men	both	women	men
Industry (ref. extractive)						
Transformative/ Distributive	-0.181	-0.111	-0.160	0.051	0.210	-0.060
	(0.190)	(0.397)	(0.221)	(0.229)	(0.419)	(0.274)
Social	0.271	0.457	0.085	0.769***	1.157***	0.425
	(0.195)	(0.398)	(0.234)	(0.231)	(0.420)	(0.281)
Producer/Personal	-0.076	0.010	-0.057	0.415*	0.790*	0.159
	(0.196)	(0.402)	(0.231)	(0.233)	(0.422)	(0.280)
Transport/ Communication	-0.298	-0.323	-0.250	0.186	0.347	0.078
	(0.208)	(0.433)	(0.241)	(0.242)	(0.445)	(0.289)
Other Services	0.209	0.319	0.174	0.793***	1.253***	0.352
	(0.196)	(0.399)	(0.235)	(0.235)	(0.423)	(0.289)
Log of job experience	-0.054**	-0.078**	-0.032	-0.054**	-0.088***	-0.024
	(0.025)	(0.036)	(0.034)	(0.023)	(0.033)	(0.032)
Constant	-2.037***	-2.239***	-1.964***	-3.823***	-4.213***	-3.747***
	(0.453)	(0.693)	(0.663)	(0.499)	(0.748)	(0.716)
Observations	65,224	33,043	32,181	41,721	21,113	20,608
Number of pid	8,919	4,516	4,403	7,020	3,603	3,417

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Waves 8-18 for internal training and waves 1-18 for certified non-formal learning, controlling for year

Table C5.6 Participation in non-formal adult learning measured in the next wave in the United Kingdom for the employed population only (results as log odds ratios, observations nested within individuals)

	Internal training greater than a week-full models		
	both	women	men
Female	-0.284***		
	(0.092)		
Highest education (ref. first degree)			
Postgraduate degree	0.079	0.111	0.051
	(0.200)	(0.306)	(0.264)
Teaching qualification	0.274	0.511*	-0.476
	(0.259)	(0.305)	(0.537)
Other tertiary qualification	0.100	0.063	0.165
	(0.116)	(0.170)	(0.159)
A-level and equivalent	-0.043	-0.181	0.113
	(0.146)	(0.221)	(0.196)
GCSE and equivalent	-0.153	-0.084	-0.191
	(0.143)	(0.202)	(0.203)
Other secondary	-0.673***	-0.421	-0.865**
	(0.234)	(0.322)	(0.345)
Other	-1.125		-0.497
	(1.068)		(1.116)
None	-0.707***	-0.247	-1.154***
	(0.248)	(0.338)	(0.382)
Age	-0.010	-0.045*	0.014
	(0.018)	(0.026)	(0.024)
Age squared	-0.000	0.001	-0.001
	(0.000)	(0.001)	(0.000)
Marital status: partnership			
Widowed/partnership ended	0.355**	0.432**	0.294
	(0.148)	(0.198)	(0.233)
Never married	-0.062	-0.002	-0.133
	(0.116)	(0.170)	(0.162)
Age of youngest child in household (ref. no children)			
Under 1	-0.288	-0.552*	-0.132
	(0.182)	(0.320)	(0.225)
Between 1 and 3	-0.020	0.119	-0.092
	(0.126)	(0.193)	(0.169)
4 and over	0.030	-0.087	0.154
	(0.095)	(0.146)	(0.129)
log of income	0.327***	0.372***	0.282**
	(0.078)	(0.112)	(0.110)

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Table C5.6 Continued

	Internal training greater than a week-full models		
	both	women	men
Social class (ref. higher professionals)			
Lower professionals	0.062	-0.003	0.114
	(0.098)	(0.149)	(0.131)
Routine non-manual employees	-0.239*	-0.288*	-0.150
	(0.128)	(0.175)	(0.200)
Personal service employees	-0.134	-0.279	0.286
	(0.179)	(0.224)	(0.350)
Self-employed			
Famers			
Foremen and technicians	-0.013	-0.495	0.098
	(0.153)	(0.340)	(0.178)
Skilled manual	-0.225	0.261	-0.319
	(0.175)	(0.360)	(0.205)
Semi- and unskilled manual	-0.703***	-0.674**	-0.712***
	(0.163)	(0.270)	(0.206)
Firm size (ref. 50 and fewer)			
50-250	0.421***	0.431***	0.449***
	(0.085)	(0.124)	(0.119)
250+	0.649***	0.449***	0.831***
	(0.097)	(0.144)	(0.133)
Part-time (ref. full-time 30 and more)	-0.416***	-0.474***	-0.018
	(0.124)	(0.145)	(0.270)
Fixed term contract (ref. permanent)	-0.279	-0.092	-0.573*
	(0.195)	(0.249)	(0.318)
Industry(ref. extractive)			
Transformative/Distributive	-0.275	0.349	-0.487
	(0.429)	(1.063)	(0.479)
Social	0.218	0.889	-0.033
	(0.434)	(1.063)	(0.491)
Producer/Personal	0.070	0.664	-0.106
	(0.435)	(1.067)	(0.488)
Transport/Communication	-0.073	0.471	-0.233
	(0.449)	(1.095)	(0.503)
Other Services	0.155	1.045	-0.388
	(0.439)	(1.066)	(0.506)
Log of job experience	-0.114**	-0.116*	-0.114*
	(0.045)	(0.068)	(0.061)
Constant	-6.444***	-7.513***	-6.398***
	(0.967)	(1.635)	(1.346)
Observations	37,611	18,971	18,562
Number of pid	6,725	3,446	3,261

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: Author's own calculations from BHPS.

Table C5.7. Adult learning and access to non-precarious job in the UK (random effects and fixed effects linear regressions).

	Non-precarious jobs defined in terms of its temporal and social aspects			Non-precarious jobs defined in terms of its organizational and economic aspects		
	Formal adult learning	Formal adult learning and current job status	Formal adult learning, fixed effects	Formal adult learning	Formal adult learning and current job status	Formal adult learning, fixed effects
	Model 3.1	Model 3.2	Model 3.3	Model 4.1	Model 4.2	Model 4.3
Adult learning (ref. no adult learning)						
Adult upgrader	0.022***	0.009*	0.061***	0.029***	0.022***	0.073***
Adult side-stepper	0.005	0.002	0.044*	0.007	0.016**	0.076***
Employment status (ref. non-precarious employment)						
Precarious employment	-0.264***	-0.271***	-0.026	-0.566***	-0.566***	-0.184***
Unemployed	-0.449***	-0.463***	-0.116***	-0.586***	-0.591***	-0.201***
Not in labour force	-0.719***	-0.728***	-0.370***	-0.711***	-0.714***	-0.374***
*Interactions: employment status*adult upgraders*						
In a precarious job * adult upgraders		0.060***			0.016	
Unemployed * adult upgraders		0.056*			0.001	
Not in labour force * adult upgraders		0.085***			0.029**	
*Interactions: employment status*adult side-steppers*						
In a precarious job * adult side-steppers		-0.014			-0.031***	
Unemployed * adult side-steppers		0.072***			0.037	
Not in labour force * adult side-steppers		0.017			-0.005	
Highest educational qualification before adult learning (ref. university degree)						
Tertiary degree (non-university level)	0.006	0.006		-0.034***	-0.034***	
Upper secondary degree	-0.005	-0.004		-0.047***	-0.047***	
Below secondary degree	-0.037***	-0.036***		-0.090***	-0.090***	
Observations	50,304	50,304	12,872	50,005	50,005	14,392
Individuals	10,342	10,342	2,107	10,304	10,304	2,350

Source: Own calculation based on BHPS (1999-2008) first reported in Vono de Vilhena et al. 2016.

Notes: *** p<0.01, ** p<0.05, * p<0.1. Models control for gender, age, age squared, partnership, having children under 3 years old in the household, place of residence and period. In models 3.3 and 4.3 the sample is restricted to individuals who moved into or out of a non-precarious job during the observation period.

Herewith I, Nevena Kulic, confirm that I collaborated with Patricia McMullin on the following chapter:

> McMullin, P. and Kulic, N.(forthcoming 2016) "Onwards or Upwards? The role of subject choice and schools in the reproduction of educational inequality in England". In: Blossfeld, H.-P., Buchholz, S., Skopek, J. & Triventi, M. (Eds.), Models of Secondary Education and Social Inequality- An International Comparison. Cheltenham/Northampton: Edward Elgar.

I agree with using this work as an integral part of her thesis

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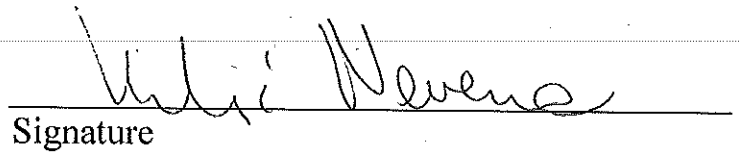
16/02/2016 

Signature

Herewith I, Daniela Vono de Vilhena, confirm that I collaborated with Patricia McMullin on the following article:

Vono de Vilhena, D., Kosyakova, Y., Kilpi-Jakonen, E., and McMullin, P. (2016). Does adult education contribute to securing non-precarious employment? A cross-national comparison. In: *Work, Employment and Society*, 30(1), 97–117.

I agree with using this work as an integral part of her thesis.

28/04/16 Daniela Vono de Vilhena

Signature

Herewith I, Elina Kilpi-Jakonen, confirm that I collaborated with Patricia McMullin on the following chapters and articles:

McMullin, P. and Kilpi-Jakonen, E. (2015). The consequences of shifting education and economic structures for gender differences at labor market entry: The British case study. In: H.-P. Blossfeld, J. Skopek, M. Triventi, and S. Buchholz (Eds.), *Gender, Education and Employment: An International Comparison of School To-Work Transitions* (Pages 122–141). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

McMullin, P. and Kilpi-Jakonen, E. (2014). Cumulative (dis)advantage? Patterns of participation and outcomes of adult learning in Great Britain. In: H.-P. Blossfeld, E. Kilpi-Jakonen, D. Vono de Vilhena, and S. Buchholz (Eds.), *Adult Learning in Modern Societies: Patterns and Consequences of Participation from a Life-Course Perspective* (Pages 119–139). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

Kilpi-Jakonen, E., Buchholz, S., Dämmrich, J., McMullin, P., and Blossfeld, H.-P.(2014). Adult learning labor market outcomes, and social inequalities in modern societies. In: H.-P. Blossfeld, E. Kilpi-Jakonen, D. Vono de Vilhena, and S. Buchholz (Eds.), *Adult Learning in Modern Societies: Patterns and Consequences of Participation from a Life-Course Perspective* (Pages 3-28). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

Vono de Vilhena, D., Kosyakova, Y., Kilpi-Jakonen, E., and McMullin, P. (2016). Does adult education contribute to securing non-precarious employment? A cross-national comparison. In: *Work, Employment and Society*, 30(1), 97–117.

I agree with using this work as an integral part of her thesis.

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28/04/2016 Elina Kilpi-Jakonen

Signature

Herewith I, Sandra Buchholz, confirm that I collaborated with Patricia McMullin on the following chapter:

Kilpi-Jakonen, E., Buchholz, S., Dämmrich, J., McMullin, P., and Blossfeld, H.-P.(2014). Adult learning labor market outcomes, and social inequalities in modern societies. In: H.-P. Blossfeld, E. Kilpi-Jakonen, D. Vono de Vilhena, and S. Buchholz (Eds.), *Adult Learning in Modern Societies: Patterns and Consequences of Participation from a Life-Course Perspective* (Pages 3-28). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

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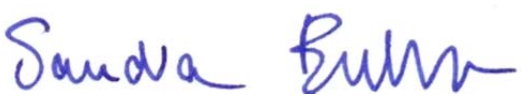
16/02/2016 

Signature

Herewith I, Hans-Peter Blossfeld, confirm that I collaborated with Patricia McMullin on the following chapter:

Kilpi-Jakonen, E., Buchholz, S., Dämmrich, J., McMullin, P., and Blossfeld, H.-P.(2014). Adult learning labor market outcomes, and social inequalities in modern societies. In: H.-P. Blossfeld, E. Kilpi-Jakonen, D. Vono de Vilhena, and S. Buchholz (Eds.), *Adult Learning in Modern Societies: Patterns and Consequences of Participation from a Life-Course Perspective* (Pages 3-28). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

I agree with using this work as an integral part of her thesis.

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16/02/2016 Hans-Peter Blossfeld

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Herewith I, Johanna Dämmrich, confirm that I collaborated with Patricia McMullin on the following chapter:

Kilpi-Jakonen, E., Buchholz, S., Dämmrich, J., McMullin, P., and Blossfeld, H.-P.(2014). Adult learning labor market outcomes, and social inequalities in modern societies. In: H.-P. Blossfeld, E. Kilpi-Jakonen, D. Vono de Vilhena, and S. Buchholz (Eds.), *Adult Learning in Modern Societies: Patterns and Consequences of Participation from a Life-Course Perspective* (Pages 3-28). Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

I agree with using this work as an integral part of her thesis.

Signed

16/02/2016 J. Dämmrich

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Herewith I, Yuliya Kosyakova, confirm that I collaborated with Patricia McMullin on the following paper:

Vono de Vilhena, D., Kosyakova, Y., Kilpi-Jakonen, E., and McMullin, P. (2016). Does adult education contribute to securing non-precarious employment? A cross-national comparison. In: *Work, Employment and Society*, 30(1), 97–117.

I agree with using parts of this work related to the UK analyses as an integral part of her thesis.

Signed

27/04/2016 _____

Signature